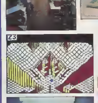


11-17 September 1986 Vol 5 No 37

PCW show heralds bumper autumn

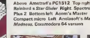
All the show news starts on p24



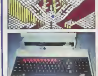








Above Amstrad's PC1512 Top right Rainbird's *Star Glider* Right Spectrum Plus 2 Bottom left Acorn's Master Compact micro Left Anolasoft's *Marble Madness*, Commodore 64 version








REACH FOR THE TOP
STRIKE FORCE HARRIER
Can you meet the ultimate challenge?
NEW Spectrum £9 95 tape
NEW Commodore 64 £9 95 tape £12 95 disk
Amstrad CPC £9 95 tape £14 95 disk
BBC/Electron £9 95 tape, £12 95 disk
MIRRORSOFT Purnell Book Centre, Paulton, Bristol BS18 5LQ

Contents

Editor Christina Erskine **News editor** John Lettice **Features editor** John Cook **Technical editor** Duncan Evans **Production editor** Michele Beauchamp **Supplements editor** Christopher Jenkins **Supplements designer** Barbora Hajek **Advertisement and Promotions manager** Simon Langston **Assistant advertisement manager** David Osen **Advertisement executive** Jon Beales **Classified executive** Rodney Woodley **Editorial secretary** Annmarie O Dwyer **Administration** Geraldine Smyth **Managing editor** Peter Worlock **Publishing director** Jenny Ireland **Published by** Sunshine Publications Ltd 12–13 Little Newport Street London WC2H 7PP Tel 01 437 4343 Telex 296275 **Typeset by** Magazine Typesetters 6 Parnell Court, East Portway Andover Hampshire **Printed by** McCorquodale Magazines, Andover, Hampshire **Distributed by** S M Distribution London SW9 Tel 01 274 8611 Telex 261643

Popular Computing Weekly. Tel: 01-437 4343.

ABC

How to submit articles Articles which are submitted for publication should not be more than 2000 words long. The articles and any accompanying programs should be original. It is breaking the law of copyright to copy programs out of other magazines and submit them here – so please do not be tempted. We cannot guarantee to return your programs – so please do not send your only copy. **Accuracy** *Popular Computing Weekly* cannot accept any responsibility for any errors in programs we publish, although we will always try our best to make sure programs work.

Atari's new supermicros

ATARI is heading into the Christmas market with two new machines at the top of its range, but although the company is now to offer a £344 unbundled version of the 520ST as a form of flexible response to the Amstrad PCs It won t be headed for direct competition with Alan Sugar – yet

The two new machines are the 2080STS and the 4160STS – 2Mb and 4Mb versions of the 68000-based machine They're due to go on the market in November, and retail prices will be £1 352 and £1,716 respectively for versions with mono monitor, and £1,587 and £1,952 for colour

According to Atari general manager Max Bambridge the machines aren't intended for the mass market, but are intended to provide massive Ram for specialist areas such as the audio and video industries

The price cut on the 520ST means that Atari s "£100 off' summer offer is now permanent, and that a mono ST system can be put together for around £550 retail This doesn t rival Amstrad s entry level of £444 for a PC, but Atari is at pains to point out that the ST is a more sophisticated machine and company president Sam Tramiel is currently planning assaults on Amstrad in terms of power, price and design

It's not clear what form these assaults will take but Tramiel clearly would like to do all three at once A mock-up of a new machine, which Tramiel sees as selling in tandem with the current range and Bambridge says will launch at the Hanover Fair next year, was being shown discreetly in Atari s back room at the PCW show The keyboard is similar to that of the present range of STs but is minus the section holding the various processors and Ram chips The new design houses these in a compact box the show prototype being equipped with a single 3½ inch drive Expansion such as hard discs and extra floppy drive are housed in a similar case

Atari president Sam Tramiel says he hasn t decided on the amount of Ram production machines will have, but initially it will be either 2Mb or 4Mb Versions of the machine will also house the full 68020 processor The price also hasn t been fixed

More power to your ST

He describes this first as "competitive", but follows it up by making it clear the competitor will be Amstrad, and specifically the new Amstrad PC

Tramiel envisages it selling as a PC style bundle, and ultimately it appears that Atari will be looking at a range of 68000-based bundles starting at mono monitor, ST and single drive for around the £450 mark A 512K version would be a credible challenger, but one, two or even 4Mb machines would be more in keeping with Atari s sledgehammer approach to marketing The company is however likely to hang back to see how the Amstrad PCs sell, and to concentrate on getting the ST range more widely accepted

Tramiel freely admits that Atari still has a tough task ahead of it in establishing the ST, particularly now that the IBM standard is dominant in the US home market and poised for take-off in Europe s equivalent The company s target is 25 per cent of the market and although he claims to be close in Europe, Atari hasn t achieved anything like that in the US or the UK

But as far as he's concerned the PC craze in general and Amstrad in particular, can't last "The PC is seven or eight year old technology It s technically limited and we ll be mounting campaigns to compare the ST to the clones This year the clones will have a big market share, but as software becomes available the 16-bits will begin to take over In five years the 68000 and 68020 will be taking over the marketplace '

Software costs fall

NEW STAR Software is planning a price blitz on the PC software market, and predicts that it will force the cost of applications down below £100 Most of the traditional PC software suppliers have set their faces against price cuts but says New Star spokesman Chris Laing, ' They will find they will have to change their minds if they want to stay in the game "

Initially the major software houses will be unwilling to enter into cheap licensing deals, reasoning that this will destroy the full price software market, so New Star intends to supply the hardware clone market by producing software clones The company will initially be selling MSDOS versions of *New Word 2* (£69) a *Wordstar* compatible word processor *VP Planner*, Paperback Software s *Lotus 1–2–3* clone (£99), *VP-Info* a *dBase III* workalike (£99), and *Cracker 3*, a £69 memory resident spreadsheet

These are to be followed up with *Streaker*, which for £99 allows *New Word* and *Wordstar* text files to be indexed to form databases Further products are to follow, but it s unlikely that many of these will be licensed versions of the existing industry standards

Laing accepts that some users will want the real thing rather than lookalikes, but feels that the new users the Amstrad PC will bring in won t be bothered about the name of the product This will mean the bigger companies will either have to cut prices or retreat into the higher cost corporate sector of the market

Chess change

IN *Popular Computing Weekly* volume 5 issue 34 the pictures of *Psi Chess*, and *Colossus 4* were inadvertently transposed

Profuse apologies to both software houses

Laskys offers support for new users

HIGH street retailer Laskys is to sell a hotline support service for new computer users for £39 99 for a three-month subscription The package is being operated by the Interlex software group, and operates six days a week, 9am–9pm weekdays and 9am–1pm on Saturday

The service is likely to be particularly attractive for purchasers of cheaper computers that don t come with a great deal of support

Details from Laskys Hardman House, The Hyde, Hendon, London NW9 6JJ Tel 01-200 0444

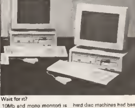
Queues form for the PCs

BACKLOGS were building up for Amstrad PC orders within hours of the machine's launch last week. By Friday Dixons, which had rushed display models to its stores, was quoting delivery in six to eight weeks for floppy versions of the machine, but couldn't give a date at all for the hard disc models.

The company's Holborn branch, which houses one of Dixon's biggest computer sections, has only one PC on display. "I can't even quote a delivery date for the hard disc machine," said a spokesman. He said he was getting estimates of anything between two to eight weeks for the floppy versions but as demand seemed to be similar to that for the PCW when it was first launched he felt six weeks was more realistic.

Amstrad intends to ramp up production of the machines to 70,000 a month by Christmas, and the growing waiting list for the floppy versions of the machines can be ascribed to demand, but the longer, as yet undetermined delay for the hard disc machines seems more supply-related.

One industry source suggested that the delay was related to the fact that the decision to launch the 10Mb and 20Mb versions of the PC was taken very late, just prior to the launch. Because the machine's construction has been standardised it's fairly easy for Amstrad to plug hard discs rather than floppy drives into the machines coming off the line, but if the decision was taken this late there's likely to be some delay while adequate hard disc stocks are secured.



Wait for it?

The low price of the top end machines (£822 for 10Mb and mono monitor) is also likely to stimulate demand for hard disc versions, and Amstrad will inevitably have problems in judging proportions correctly.

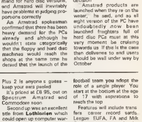
An Amstrad spokesman confirmed that there has been heavy demand for the PCs already, and although he wouldn't state categorically that the floppy and hard disc machines would reach the shops at the same time he denied that the launch of the hard disc machines had been in any way a last-minute decision.

"Amstrad products are launched when they're on the water," he said, and as all eight version of the PC have undoubtedly now been launched freighters full of hard disc PCs must at this very moment be cruising towards us. If this is the case then deliveries to end users should be well under way by October.

Hotlines

Argus Press Software, although avoiding the hustle and bustle of the main PCW show had two excellent new games on display at their "trade only" suite at the nearby Royal Kensington Hotel. First of all, *Glider Rider* on Spectrum, the latest from the Quicksilver label. Features a novel scenario – blowing up nuclear reactors on a plastic island – and well executed 3D graphics. It has you alternately chugging around the Abraxas Corporation HQ on a motorcycle, and flying round it under a handglider.

The most impressive feature of the game is the sound – only implemented on the 128/Plus 2 versions – which can only be described as stunning. It includes some excellent samples, and must be the best yet for any Spectrum game to date. What will happen when programmers really start getting to work on the Plus 2 is anyone's guess – keep your ears peeled.



It's priced at £8.95, out on Spectrum, Amstrad and Commodore soon.

Second up was an excellent title from **Lothlorien** which could open up computer wargames to a whole new range of computer users. Called *Legions of Death*, the game deals with the Punic Wars between Carthage and Rome. Gone are the artificial constraints of hex grids and in their place is a unique 'cartographic' representation of the playing area. The whole playing area is presented on the left hand side of the screen.

You build up and move your armies and fleets under full icon control with one/two player options. A novel mix of tactical and strategic elements, it's well worth a look. Out at £9.95 on Spectrum, Amstrad and Commodore soon.

Gremlin Graphics has lined up its autumn collection. Launching somewhat sooner (September 22), *Footballer of the Year* is a novel idea in that instead of managing a whole football team you adopt the role of a single player. You start at the bottom at the age of 17 with aspirations to reach the top.

Features will include transfers, career record cards, League, EUFA, FA and Milk Cup games ... and who knows, probably cartilage operation and *News of the World* scandals as well. Out on all major systems priced at £6.95 (C16/Plus 4), £7.95 (Spectrum, MSX) and £9.95 (Amstrad, CBM 64, BBC/Electron).

Palace has brought in comic artist Dan Malone for the design of its latest arcade adventure – *Antiriad*. It's based in a post holocaust world which has been taken over by aliens, and you play the champion of the enslaved humans and must explore the hazard filled caverns of the ancient volcano in which they have taken residence.

The ultimate aim is to assemble a complete suit of armour (actually a sophisticated combat suit) and rescue humankind from the grip of its overlords.

PC software war

THE scramble to supply applications for the new Amstrad PCs is now well and truly on, with Amstrad launching the first four of an intended ten packages, DR producing a further four to bring its Gem-based range up to nine, and Microsoft bringing up the rear with reduced cost versions of its own applications Microsoft Word and Multiplan expected soon

The word processing market for the machines will be lucrative, and Amstrad has recognised this by tying up sole rights to MicroPro's Wordstar 1512, specially developed for the machine The package's user interface is similar to that of Wordstar Easy, the friendlier version of Wordstar launched earlier this year, but according to MicroPro managing director Robin Oliver it's a new implementation of Wordstar

DR's new packages are Gem Diary, Draw Business Library and Fonts and Drivers Pack at £39 95 and Font Editor at £99 95 An implementation of the Gem Programmer's Toolkit will also be available at £179 95

The new packages join Draw, Graph, WordChart and Write (all £99 95), and will link into the Gem packages bundled with the PCs Amstrad's packages don't do this, and the first few months sales are likely to show whether users will want to opt for a traditional type of system or whether they'll jump for Gem

Microsoft announced its new products at the PCW Show They're similar to the full-sized products, but Multiplan Junior is a smaller 63 × 255 cell spreadsheet while Word Junior lacks Word's outlining, indexing and style sheet facilities They're both £69 95 while full-size Word is a snip at £500 The company is confident that it hasn't set a pricing time bomb for itself

Ariola Sega link

ARIOLASOFT has bought the rights to see the Sega video games machine in the UK this Christmas

Sega's console, the Master System, was launched at the Chicago Consumer Electronics Show in June this year It uses both card and cartridge software, which have a capacity of 256K and 1048K respectively Video games machines were one of the surprise success stories of the Chicago show with Nintendo and Atari both launching products in that field as well

Ariolasoft's Frank Brunger said "There will be some out here in time for Christmas, but we want to build up demand first It'll be priced at either £79 99 or £89 99 – we're not sure yet"

As well as bringing over software already written for the machine Ariolasoft intends to put some of its own games on to card and cartridge including the acclaimed *Skyfox*

Digitiser for Spectrum

DUTCH company Data-Skip has developed a £69 video digitiser for the Spectrum The Videoface consists of a small box that alters video signals from a video recorder or camera for display on the Spectrum's screen

Details from Data-Skip 1 Willemsteeg 10 2801 WC Gouda Netherlands Tel 0 1820-20581

Microlink to the States

MICROLINK, Database Publications' front end to the Telecom Gold electronic mail service, has established a gateway to New York-based online database Mnematics. Using the gateway costs about half as much as a conventional transatlantic phone call

Details from Microlink, Europa House 68 Chester Road, Hazel Grove, Stockport SK7 5NY Tel 061-456 8383

New printer from Samleco

SAMLECO has added a 132 column printer to its range of low cost dot matrix machines The DX 136 retails at £402 50 and prints at 120 cps It comes with tractor feed as standard and provides draft correspondence and near letter quality modes As it uses interface cartridges it can be connected to most computers

Details from Samleco, 9 Falracres Industrial Estate, Dedworth Road Windsor Tel 0753 854717

Diary Dates

SEPTEMBER

12–14 September
8th Official Commodore Computer Show
UMIST Manchester
Details A wide range of Commodore hardware, software and peripherals
Price £3 adults £2 children, £1 discount for advance booking
Organiser Database Exhibitions 061-456 8835

26–28 September
Electron and BBC Micro User Show
UMIST Manchester
Details: Software, hardware and peripherals for BBC machines
Price £3 adults £2 children £1 discount for advance booking
Organiser Database Exhibitions, 061-456 8835

OCTOBER

3–5 October
The Amstrad Computer Show
Novotel London
Details Home and business software and hardware for the Amstrad range.
Price £3 adults £2 children £1 discount for advance booking
Organiser Database Exhibitions 061-456 8835

30–31 October
Hampshire Computer Fair
Guildhall, Southampton
Details Business computers
Price Free entry by business registration
Organiser Testwood Exhibitions, 0703 31557

NOVEMBER

7–9 November
Electron and BBC Micro User Show
New Horticultural Hall Greycoat Street, London SW1
Details Hardware software and peripherals for the Electron BBC micro and Master series
Prices £3 adults £2 children, £1 discount for advance booking
Organiser Database Exhibitions, 061-456 8835

Prices, dates and venues of shows can vary and you are therefore strongly advised to check with the show organiser before attending *Popular Computing Weekly* cannot accept responsibility for any alterations to show arrangements made by the organiser

Letters

Memotech's a Rolls Royce

After reading *Popular* last week I felt compelled to write in and echo the things that Philip Arkley said regarding the Memotech (Letters, August 14), and also to enlarge a little on how good a machine the MTX 512 really is

If you thought that the BBC B was the Rolls Royce of home computers then take a look at the Memotech The BBC may have a built-in assembler, but then so does the Memotech, which also has full editing capabilities, and Front Panel a high level assembler/machine code debugger and analyser

If you thought the graphics on the Commodore 64 were good, remember that the Memotech can do all that in Basic, using very advanced Logo type graphic commands and it does it at lightning speed

And for those of you who are Spectrum owners, did you know that for a mere £35 you can buy a Speculator which slots into the side of the MTX 512 and lets you use a lot of Spectrum software?

I could go on about the 32 sprites (all of which can be moving on the screen at the same time), four channel sound, the extremely versatile *Genpat* commands and the super fast tape loading, but I think Memotech itself would be better at that than me

Alan Hamilton
Ayrshire

Bedroom games

I recently read an article in your magazine about *The Pawn* a graphic adventure available on a variety of computers, including the Atari ST

I am particularly interested in getting a poster of the picture of the ice skull and the wizard on the rope bridge, as this larger version may be used to scale up the picture to paint on my bedroom wall

Would it be breaking any copyright laws if I was to do this? Would I have to gain permission from the publishers? I would appreciate any information you could give me on this matter

P Panayis
Northampton

The publisher of *The Pawn* on the Atari ST is Rainbird Software The address is 74 New Oxford Street, London W1 (01-631 5206)

We cannot imagine Rainbird having any objection to your project whatsoever

A load of rubbish

In a letter published in *Popular* December 5, 1985, I made some comments about loops that were a load of rubbish I apologise to readers and in particular Acorn, for my remarks

G Wearmouth
London

UXB correction

Due to a printing error the graphic characters in the UXB listing were omitted The following lines contain the characters which must be typed in with the cursor in graphics mode as explained by Ian Grainger in the August 28th issue

```
[illegible]
```

GLP correction

Concerning the letter by Niel Markwick (*Popular* 28th, August) describing the facilities of the Centronics GLP printer in NLQ mode it prints at only 12cps, not 25cps as stated He also said that it can print in 3 different text sizes There are in fact 4 text sizes 5cpi (40 char/line), 8 5cpi (66 char/line), 10cpi (80 char/line) and 17cpi (132 char/line) A further 2 different text sizes are available in sub/superscript plus bit image graphics mode

Your £99 (+VAT) will buy a

Puzzle

Puzzle No 224

My 'Encyclopaedia of Science' was standing disarranged on the shelf As shown in the illustration the nine numbered volumes were out of order, but I noticed that the number formed by the central three volumes was equal to the product of the groups of books on either side of it

That is 4 x 39 = 156 = 78 x 2

This set me wondering if there was any other arrangement possible with the nine volumes Such an arrangement must have the same layout as the one illustrated That is, three volumes in the centre and a double and a single volume on either side

Solution to Puzzle 219

Square is equal to 687241 (829 squared) and Prime is equal ot 94351

Solution

As the value for Square contains six digits its square root must be in the range 351 to 999 As both the value of the square and the prime end in the same digit (as represented by the letter B) this must be either 1 3 7 or 9

With this as a base subsequent square values are generated in lines 50 to 100 where each is checked for both duplication of digits or the occurrence of any zero The values that pass this test are then tested in lines 110 to 180 for the three digits *not* included in their value Each digit in turn is inserted into the array D$(3) In the 5 digit prime number we already know the value of two of the letters are R and E as these occur in the value of the square The three missing digits can therefore be placed in position in a permutation of six different ways This is done in lines 220 to 270 and after each substitution the resulting value is tested for primality in the subroutine

This results in a number of possible sets of values being printed out However the problem states that the Professor gave his class the value of the digit represented by the letter P This must be a value of P which only occurs once else an ambiguous answer would result By examining the results, only if the P was represented by a 9 would this be the case so this must have been the value that the Professor gave to his class Every other value of P that occurs does so in more than one set of figures

VOL 4 | VOL 3 VOL 9 | VOL 1 VOL 5 VOL 6 | VOL 7 VOL 8 | VOL 2

```
[illegible]
```

Winner of Puzzle No. 219

The winner this week is D Spicer of Camberwell Grove London who will be receiving £10

Rules

The closing date for puzzle 224 is September 30

parallel interface version £10 (+VAT) more will buy a parallel/serial model. For £120 (+VAT) a tractor feed option with both interfaces can be had. I have this model linked to my Sinclair QL, and am very pleased with the results. The GLP II superceded the GLP, and for £130 (+VAT) you can buy the parallel interface version from the same supplier (Rockhall of Glenfield in Leicester).

I feel that the amended information will clarify the ability of the printer. I wholeheartedly agree with Niel Markwick's sentiments: the GLP gives excellent value for money.

Paul Smith
Bath

Luck of the Irish

I was very interested to read the article by David Bolton regarding the Irish Software house, Choice.

For the past 3 years as Level 9's duplicator, I've been using MegaLoad, a turbo loader from Choice Software for their C64 masters.

MegaLoad employs three speeds, 9, 7 and 5 times and each uses a multi-coloured loading screen.

Since starting data duplication back in 1978, I've been offered many very varied and some, very expensive, turbos, but I've found nothing to match this product. Long may they continue to produce!

Simon Stable
Oxon

Electronic repair manual needed

I am a regular reader of *Popular Computing Weekly* and hope your readers might be able to help me through the courtesy of your letters page.

I am very interested in electronics and have been invalidated after an accident. My only outlook for the future lies in bench work repairing electronic equipment.

Could I please ask your readers where I can obtain any service information for repairing computers, monitors or possibly video, TV or test equipment.

I understand your magazine includes advertisers who carry out repairs but there is no one operating this service in Derby as far as I know.

Paul Simpson
41 Nairn Avenue
Chaddesden
Derby

"It's an Add on following the conversion of arcade games to computers."

Romanesque

In my Romans program for the QL (Programming, August 21) there is an omission. It is now necessary to delete line 290 for the program to work.

However, this alteration means that you can only use upper case when typing in the Roman numerals.

David Wragg
Hants

Demolition derby

Thank you for publishing Demolition on the Spectrum in *Popular* June 19.

Unfortunately you omitted to mention how to get the game running once the code is typed in. The following program should achieve this if saved on the cassette before the machine code.

```
10 LOAD "DemolCODE" CODE
20 RANDOMIZE USR 30200
```

Jonathan Davies
Bristol

WACCI club

Many thanks for publishing my letter about an Amstrad CPC user club in *Popular* August 21.

I have now been able to start the club and I thought I'd write with more details.

The club is called WACCI, and every month I distribute a nationwide newsletter on tape/disc of members' views and contributions.

The subscription fee for this is a measly £3 per year. Anyone interested should drop a line and a stamp and I'll send further details.

Jeff Walker
75 Greatfields Road
Hillingdon
Uxbridge
UB8 3QN

GAC!!!

Picking up my trusty copy of *Popular*, August 21, I noted with interest a feature on Incentive's *Graphic Adventure Creator* for the BBC. Being somewhat involved in the field of adventures, I was interested to see what *GAC* was like for the BBC, yet to my horror the article was comparing *GAC* with *The Quill*. Anyone who can say 'Forget *The Quill*' in preference to *GAC* needs a strong talking to.

The *GAC* system is good; let me say that first. However, in terms of flexibility and game size it is nothing special: the only feature found in it and lacking in *The Quill* is a decent parser.

Even there, *GAC* is only a little more advanced. With such a pitiful amount of memory free and serious limitations such as 255 character max location descriptions, it could never have been used to write *The Boggit* which *The Quill* handled easily.

Statements like "For the first time ... a utility which can create freestanding programs" are just ridiculous. To the reviewer, Richard Benson, I can only say that some of us are above being impressed by a few pretty graphics and a press release.

I would encourage readers to consider whether they want an old system capable of producing large, high quality adventures or what amounts to an art utility with the adventure bit bolted on.

And if Mr Benson still cannot produce a decent game using *The Quill*, I have one tip for him – read the manual!

Fergus McNeill
Delta 4 Software
Swanmore
Hants

Richard Benson replies: I'm aware of the limitations of *GAC*, and of the fact that *The Quill* outshines it in many aspects. My argument is that *GAC* is quick and easy to use, and produces illustrated adventures which are more obviously 'commercial'.

***The Quill*, for all its advantages, needs *The Patch* and *The Illustrator* to produce similarly commercial results.**

Whatever the merits of *The Quill*, I think an adventure written with *GAC* is certainly simpler for non-programmers to produce – and surely that's a strong point.

RSX supplied for Amstrad

With reference to my RSX extension program Xen for the Amstrad (see this week's issue), I would like to add that I will supply the package on tape for £2.50, or disc for £6 if readers are interested. The address is below.

Simon Goodwin
41 Fountains Drive
Acklam
Middlesbrough
Cleveland
TS57 7LW

Quality and power

I am a recent and happy owner of the Memotech MTX512, which I have found to be a beast of quality, value and power. I use it primarily for programming, although I do own several games.

I have some questions regarding Memotech. Is there a Memotech user club? Has Memotech moved, since I have yet to receive a reply to a letter I wrote some weeks back? Can you tell me where I can get books and software for the MTX512?

Chris Ellis
Paignton
Devon

The Memotech user group is called Genpat, and is run by Keith Hook. He can be contacted on 0282 39598.

Yes, Memotech has moved. We don't have the new address, but it can now be contacted on 0993 76251.

For books and software, try Syntaxsoft, whose telephone number is the same as the one given above for Genpat.

Keep taking the tablets

Peter VanDoom examines the potential of home video creation with the Pioneer PX-7 MSX computer

When you've seen one MSX computer, you've seen them all right? Well frankly, no. I must admit this was my point of view until I saw the Pioneer PX-7 computer. So what's so different with this one? Well for a start, it has the ability to overlay its own screen, both graphics and text, on top of an incoming video signal, and to output this to another video recorder.

The computer itself comprises two units, the keyboard being separate from the cpu. This main unit houses all the firmware and connections for both video in and out and stereo sound. Whilst rather large in micro terms, it is obviously designed to blend well with other video or hi fi equipment.

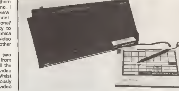
The main feature of this unit is to provide ten screen 'wipes' (used to avoid sudden scene changes and fades not normally available to the home video buff). These wipes in the standard ways single vertical or horizontal, dual vertical or horizontal (a shutter effect) as well as unique patterns like a venetian blind effect and a dot matrix explosion.

When the screen is wiped, a stored screen is brought back onto the screen, overwriting the video picture already there. Titles and pictures, or perhaps business graphs and charts, can thus be brought onto the screen in a very smooth and effective way.

The computer's text can be superimposed on to the video source in one of fifteen colours, thus enabling easy post-production titling. As all video movie enthusiasts know, this is very hard to achieve without expensive equipment. The text, whilst only being of one character font, can be virtually any size on the screen, ranging from the normal size (8x8 pixels) to one character taking up the entire screen (256x192 pixels).

Graphics as well as text can be superimposed on top of the video, enabling the user to add diagrams to business promos or perhaps even a map to go with a video of the family holiday. MSX has 256 sprites, so simple animation is possible to liven up presentations. As an optional extra, the PX TB7 Video Art Tablet and accompanying Rom cartridge makes drawing on the screen much easier (being a touch-tablet with small stylus).

The Rom software is quite comprehensive, having a small pull-down type menu which provides access to all line and shape (circle, box, fill etc) drawing.



It also provides a simple sprite designer. When the artwork is complete a separate menu on a plastic overlay sheet for the tablet (thus keeping the screen clear) enables the previously drawn picture to be brought on and off the screen in the aforementioned wipes, making editing of video material that much easier.

Naturally all the wipes are available from Basic and pioneer provide a special extension to standard MSX Basic, called P-Basic. This also provides direct remote control of Pioneer's LD 700 and LD-1100 Laserdisc video disc players, paving the way to cheap, interactive video games.

It is also possible to control the three levels of computer/video mixing ie, superimpose, video only and computer only, from Basic although three special keys are provided on the keyboard for manual control.

The PX-7 is of course a fully fledged MSX compatible computer meaning that it is able to run all MSX software and peripherals. The machine comes with 48K bytes of Ram, 32K of which is available to the user, and 16K used as the Video Ram. This is upgradable to 80K, with the addition of a 32K Ram cartridge leaving 64K for the user.

The main cpu has connections for not only video and audio in/out but also TV, RGB monitor, a cassette recorder, two MSX cartridges, system control (for the video disc), Centronics printer, keyboard, two joysticks and stereo headphones – phew! The main unit also houses two speakers for the stereo sound.

However, it does have one glaring fault! That is, the computer's screen only takes up the middle two thirds of the TV screen. This means that it is impossible to wipe or write to the whole of the available TV screen! This limits the PX7's applications somewhat, as it can not be used as a true wipe generator. However, the screen is perfectly large enough for titling, credits and labelling (that is, if the object to be labelled is in the centre of the picture!) and some very professional effects can be produced.

> *"The PX-7 is, of course, a fully fledged MSX compatible computer, meaning that it is able to run all MSX software and peripherals"*

Hardware *Pioneer PX-7, PX-TB7 graphics tablets* **Price** PX-7 £299, PX TB7 £89 **Supplier** Pioneer High Fidelity Limited, Field Way, Greenford, Middlesex UB6 8UZ (01-575 5757)

The proof is in the printing

Dave Race explains how to expand your Amstrad DMP 2000's buffer to 8K

Amongst other great features the Amstrad DMP 2000 printer comes complete with a 2K buffer which stores characters sent from the computer and allows the computer to carry on computing instead of having to wait for the printer to finish printing

Unfortunately it is not really a 2K buffer despite there being a 2K Ram chip inside the printer This is because the printer uses some of this memory itself and some is used for the line buffer, which stores the line about to be printed

In fact the actual printer buffer is only half a kilobyte which obviously won t store very much text at all, slightly less than this paragraph in fact This means that in reality your computer will still have to wait for the printer to catch up with it

However, I have discovered that it is possible to expand the printer buffer some seven fold, thus allowing reasonably large chunks of text to be sent to the printer without holding up the computer

It should be noted that fitting this extra memory will almost certainly invalidate the Amstrad warranty and so should only be carried out on machines over a year old, or by owners who don t mind paying for any repairs if their printer goes wrong That warning out of the way, on with the instructions

The extra memory comes form fitting an 8K ram chip in the printer in place of the 2K chip already there The chip you will need is a 6164, available from RS (ref 301-670) for about a fiver Also you will need a small Posidrive screwdriver a small flat bladed screwdriver a sharp blade (a scalpel is perfect) and a soldering iron with a fairly small tip

To begin with ensure that the mains lead is unplugged It is not sufficient to simply switch the printer off, and you must check there is no paper or ribbon in the printer

Now turn the printer over so you have access to the bottom (you ll probably want to put the lid to one side) You will be able to see six Posidrive screws, three at the front and three at the back, unscrew and remove these – and put them somewhere safe Turn the printer back over and remove the top half this is best done with the friction/tractor switch in the friction position Lift the top half up, tilt it forward, and you will see that there is a ribbon cable going from the push button panel to a printed circuit board in the bottom half Unplug this at the PCB end and you will be able to remove the top completely

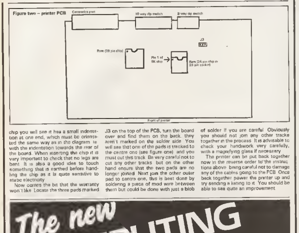
If you examine this PCB you will see six more leads going to it Remove all these carefully, making note of where each goes You also need to unscrew the two Posidrive screws that seem to be holding the Centronics connector in place The PCB can now be removed by lifting it up from the rear and pulling it out backwards Place the PCB on your work surface preferably on a piece of cardboard to give it some protection It should not be placed on a metal surface

Remove the 2K Ram chip (see figure two) This is best done by levering the chip up at both ends in turn with the flat bladed screwdriver until it comes free The 8K chip goes in the socket you have just emptied If you look closely at the

The table below shows just how great an increase in memory is provided

Mode	Internal Ram	Receiving buffer	Line buffer	Download characters	Dipswitch 2–3	Dipswitch 2–4
Character	2	0 6	0 9	0	off	off
	8	6 6	0 9	0		
Graphic	2	0 4	1 2	0	on	off
	8	5 7	1 8	0		
Download	2	0 2	0 9	32	off	on
	8	3 6	0 9	256		
Download Graphic	2	0 2	0 9	32	on	on
	8	2 7	1 8	256		

Figure one – J3 viewed from solder side of board



chip you will see it has a small indentation at one end, which must be orientated the same way as in the diagram ie with the indentation towards the rear of the board. When inserting the chip it is very important to check that no legs are bent. It is also a good idea to touch something that is earthed before handling the chip as it is quite sensitive to static electricity.

Now comes the bit that the warranty won't like. Locate the three pads marked J3 on the top of the PCB, turn the board over and find them on the back, they aren't marked on the solder side. You will see that one of the pads is tracked to the centre one (see figure one) and you must cut this track. Be very careful not to cut any other tracks but on the other hand ensure that the two pads are no longer joined. Next join the other outer pad to centre one, this is best done by soldering a piece of mod wire between them but could be done with just a blob of solder if you are careful. Obviously you should not join any other tracks together in the process. It is adviseable to check your handiwork very carefully, with a magnifying glass if necessary.

The printer can be put back together now in the reverse order to the instructions above, being careful not to damage any of the cables going to the PCB. Once back together power the printer up and try sending a listing to it. You should be able to see quite an improvement.

Getting to First Base with Minerva

Minerva Systems is attempting to address the problems of getting to grips with databases spreadsheets, etc for the uninitiated with a series of Learner Friendly packages

First Base is one such in the range a fast but simple database for the PCW 8256/8512, with a clear, concise manual

However one huge asset of *First Base* is the inclusion of a mail merge facility for use with *Locoscript* documents, and it may well be worth a look for this alone

The size of records you create is limited only by the size of the screens, each record can have a maximum of 255 fields, each field up to 80 characters Setting up a design for a database is easily done

Once the database has been created the records are automatically sorted alphabetically, according to the field which was designated the key field

The database can then be searched and sorted into subsets for example a subset of all people living in London on a mailing list database

Inverted subsets are also catered for, all those who don t live in Manchester for example You can also search for particular words occurring in any field on any record

First Base is not relational in any way nor is there a built-in calculator Minerva s idea appears to be that potential database users should buy *First Base* to find out what databases involve and then move on to one that suits their needs more specifically

However, *First Base* is not in any way a tutorial program I would say it is useful for any one with a small and uncomplicated database to computerise particularly a small mailing list with its mail merge with *Logoscript* features

```
Fields
Cursor arrows           - move through fields with field wrapping
Delete left             - delete character to left of cursor
+ key                   - insert space at cursor position
Return Key              - Next field
Return Key on last field  Save Record

Records
T      Top of File                A      Select All Records
E      End of File                I      Insert Selection
N      Next Record                R      Get Record by Number
S      Previous Record            C      Change Keyfield
X      De-select Record           P      Print Record
D      Delete Record              Copy   Add New Record

General
L      List Selected Records      O      Output File in ASCII
M      Merge with Wordprocessor   Stop   Exit

           Press letter or Alt-letter for command required
```

It certainly can t be faulted because of its limitations, because Minerva makes no claims for it to be anything grandiose I must admit it is extremely refreshing to read in the manual itself of the limitations of *First Base* and why the user would then want to buy something more sophisticated!

Christina Erskine

Program *First Base* **Micro** PCW 8256/8512 **Price** £29 95 **Supplier** Minerva Systems, 69 Sidwell Street Exeter, Devon Tel 0392 37756

Bridging the card games gap

"Its greatest strength is the sheer range of practice and cheat options . . . these make Colossus the best bridge practice program yet"

With *Colossus Chess* going from strength to strength in all its versions CDS has decided to spread its wings a bit with *Colossus Bridge*

Bearing in mind that contract bridge often evokes (not very accurate) images of golf clubs and baize tables CDS has gone to town with the packaging

The box includes the excellent book *Begin Bridge* by G C H Fox which together with the sample hands demonstrated on the reverse of the tape makes this a suitable program for beginners an order form for Systema chess bridge and backgammon electronic games and a subscription offer for *International Popular Bridge Monthly*

Of course, the program itself which, claims the accompanying literature, plays at good club player level is in there too

Colossus follows the format of previous bridge simulations you play one hand, the computer the other three through the bidding and the play

Probably its greatest strength is the sheer range of practice and 'cheat' options rebidding resetting your original speed and distribution parameters, inputting your own hand replaying a hand asking the computer to play a card claiming some or all of the remaining tricks, getting the computer to play the entire hand All these make *Colossus* probably the best bridge practice program yet

Some of the options, in fact are almost too detailed You can set the computer s response rate at any number between one and 28 – and I found anything below 16 too fast!

For the bidding, the program follows the principles of Acol, using a weak opening no trump and Stayman, Baron and Blackwood conventions Generally it is sound, with occasional eyebrow raising bids—nothing too dissimilar to real life in fact

As for Colossus's card play It follows the generally understood opening lead conventions and from there on plays fairly solidly and predictably It finesses – sometimes – draws its trumps and doesn t throw away winners

Programmed by the team which developed CP s latest *Bridge Player* for the PCW 8256/8512 *Colossus* is similar in format with a number of improvements There is now a full score sheet, for example, and the computer will initiate conversions such as Blackwood

Altogether, *Colossus* measures up extremely well to most bridge simulations It has a range of options to beat them all, and plays well enough to satisfy most people

CDS hopes it will attract the attention of non bridge players who want to learn The accompanying book and sample hands will certainly help in this respect, if you are determined to go it alone At least when learning this way, no-one is going to shout at you, but it can still be a lonely and frustrating business

Christina Erskine

Program *Colossus 4 Bridge* **Micros** Amstrad CPCs (Spectrum conversion expected) **Price** £11 95 cassette, £14 95 disc **Supplier** CDS Software, CDS House Beckett Road, Doncaster, S Yorks

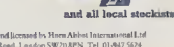
Without music, graphics and sound the Board Game has become the most popular in the world. Now it has them.

"Over 3,000 questions of no vital importance."





Available now on
Spectrum 48/128K Commodore 64/128K
BBC 'B' Amstrad CPC
Cassette and Disk

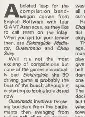


and all local stockists

TRIVIAL PURSUIT is a Trade Mark owned and licensed by Horn Abbot International Ltd
Published by Domark Limited 204 Worple Road, London SW20 8PN Tel 01-947 5624
Trivial Pursuit was programmed by Oxford Digital Enterprises



Atari hits on four favourites



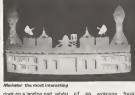
A belated leap for the compilation bandwagon comes from English Software with four GIANT Atari aces, as they like to call them on the inlay. What you get for your tenner then, are *Elektraglide Mediator, Quasimodo* and *Chop Suey*.

Well it's not the most exciting of compilations but none of the games are actually bad. *Elektraglide*, the 3D driving game is probably the best of the bunch although it is starting to look a little dated now.

Quasimodo involves throwing boulders from the battlements then swinging from bell to bell all to the accompaniment of a reasonable jingle. Regardless of what it was selling at before this has all the characteristics of a current day budget title.

Hack, chop, kick, urgh. *Chop Suey* is your basic martial arts game. Graphically okay.

The last game in the package, *Mediator* is probably the most interesting game to play, even if the instructions give you little idea of what the hell you're supposed to be doing. You take off in scene one from a large circular space station in a tiny ship. The objective is then not to dock with the other station but to head down the screen, which scrolls as you descend, towards the force field which lurks down there. After you have bombed a hole in it and passing through you must dock on a landing pad whilst avoiding anti-spaceship fire.



Mediator: the most interesting

After docking the action goes into 3D for the next couple of scenes, which include, after you've fought off some mutant trees, an *Entombed* look a like.

Overall the package can only really be considered value for money if you don't already own any of the games. This is hardly a GIANT compilation, it's more of an average height collection.

Popular Appeal ♦ ♦ ♦
Duncan Evans

Program *Atari Smash Hits* **Micro** Atari 400/600/XL/XE **Price** £9.95 **Supplier** English Software, 1 North Parade, Parsonage Gardens Manchester M60 1BX

Alleykat racing

Possibly the most eagerly-awaited follow up of all time, *Alleykat* has a hard job to outshine Andrew Braybrook's massive hit *Uridium*.

Alleykat is a racing game, very much *Uridium*-turned 90 degrees. The object-littered landscape moves vertically, while you control a racing ship which can gain height, zap obstacles and change to fighter mode to eliminate particularly dangerous hazards.

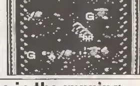
Energy nodes and money bonuses can be collected by skimming over them, while a variety of novel groundcraft and the lethal katterkiller have to be shot or avoided.

There are several different landscapes to compete over, and many different kinds of race: slalom, survival, demolition and so on. Only if you complete a certain number of laps can you gain a bonus and qualify for the next round of the challenge.

The usual clever title screens, complex sound effects and polished music combine to make *Alleykat* another sure-fire hit, but it hasn't the impact of *Uridium* and gives the impression of having been rushed out to capitalise on the success of its predecessor.

Popular Appeal ♦ ♦ ♦ ♦
Chris Jenkins

Program *AlleyKat* **Micro** Commodore 64 **Price** £8.95 **Supplier** Hewson, 565 Milton Trading Estate, Milton, Abingdon, Oxon.



C16 game in the running

If it's a hard life being a C16 owner, it must be even harder writing for it. Limited memory, no hardware sprites and a not-very good sound chip. Despite these limitations, however, an increasing amount of C16 software is verging towards what might be called respectable on other machines – and much of it, like *Monty on the Run* comes from Gremlin Graphics.

Monty on the Run was originally a straightforward 'platforms and ladders' job on the 64 – with the added advantage of a fabby soundtrack from the then almost undiscovered Rob Hubbard – which dragged the game from the category competent to excellent. Alas, the C16 version does not have this soundtrack, and it's got a fair few less screens than the original, too (a total of 30). But on the plus side, what you have got here is a well designed, nicely thought out little title that, while offering nothing startlingly new, will keep you occupied for a few of the winter evenings that will soon be upon us.

Just about polished enough to justify the price, if you enjoy games of this type, you won't be disappointed.

Popular appeal ♦ ♦ ♦
John Cook

Program *Monty on the Run* **Micro** C16 **Price** £6.95 **Supplier** Gremlin Graphics Alpha House, 10 Carver Street Sheffield S1 4FS

Johnny Reb II comes marching in

Was *Johnny Reb* the first real wargame simulation for the Spectrum? Probably, but who can remember from this point in history? But whatever the chronological order of things might be, Lothlorien's name remains in the forefront of wargame software writers. This new program drags that great old game into the modern era, while the essential details remain the same.

Gameplay takes place in the American Civil War and follows the efforts of a strong Confederate force sweeping from left to right of the play area attempting to break through a lighter Union force (ie, move from screen left and exit screen right with fewer casualties then the defending force). As in the original, a river runs from north to south and the Confederates must cross this hazard under fire from the defending Union troops.

The default set-up is pretty bare, with just a couple of hills and roads, plus some houses, but the new version allows the player (or players) to create fences, walls and buildings at will, although the landscape must remain the same. Similarly, the composition and names of both forces can be tailored to the players' requirements.

To reflect the *ad hoc* make-up of the opposing armies in the conflict (drawn from both regular soldiers and raw recruits), units possess several degrees of strength, experience and morale which change as the battle commences. Four types of units are available to both sides, namely, artillery, infantry, cavalry and supply.

Play is via joystick or cursor keys (which can be re-defined) – as the cursor box is moved over a unit, the details of that unit are displayed, and a range of options available, including orders to move (firing or not), dig in, charge and so on.

Graphics are large and very well drawn, and there is a green screen option. Instructions are adequate, though no mention is made of how to save a game in progress, though trial and error will tell you that you can break in to a menu at certain stages. Beware, however, of saving to a disc – for some reason the disc is re-formatted (without warning) to IBM format!

Overall, not very demanding, but the re-design facility will ensure that the life of the game can be greatly extended and more and more complex situations set up.

Popular appeal ♦ ♦ ♦ ♦

Tony Bridge

Program *Johnny Reb II* **Micro** Amstrad CPCs **Price** £9.95 **Supplier** Lothlorien, Victory House, Leicester Place, London WC2H 7NH.

Moonlight Madness for insomniacs

The plot to *Moonlight Madness* is so flimsy I won't bother boring you with it. Suffice to say that this is a collect the sixteen keys and open the safe game with a thrilling 2D display and single colour graphics.

So off you go leaping from platform to platform, pressing things, avoiding other things, watching great chunks of the background disappear to avoid attribute problems. In fact the only thing that is remotely interesting about this appallingly tedious game is the tune.

At first it sounds all right if a little monotonous, then it begins to grate the nerves. After a while it begins to take on all the appeal of the Chinese water torture.

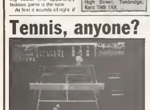
If you have trouble getting to sleep at night then this represents a surer method than counting sheep of getting some kip.

Popular Appeal ♦

Duncan Evans

Program *Moonlight Madness* **Micro** Spectrum **Price** £7.95 **Supplier** Bubble Bus Software, 87 High Street, Tonbridge, Kent TN9 1RX.

Tennis, anyone?



Just when you thought it was safe to retire to your armchair, yet another sports simulation pops up. This one is the unseasonal *Tennis*. Programmed more in a 'cartoon' style than as a simulation, the one-or-two-player singles-or-doubles contest presents the court from one end, and allows full keyboard or joystick control of the players' movements. Scores are shown at the right hand side of the court, with overall results at the top, and all the rules of tennis are adhered to.

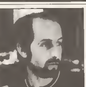
Unfortunately there's little skill involved in the game, since all you have to do is hit the fire button twice to serve then position yourself in vaguely the right position and thrash at the return. There's no way to control the power of your shot, choose forehand or backhand, produce spin, or whatever.

There is some element of timing involved but it's all too easy to get involved in endless and unexciting rallies in which the ball is just tonked back and forth across the net.

Popular Appeal ♦ ♦ ♦ ♦

Chris Jenkins

Program *Tennis* **Micro** Spectrum **Price** £9.95 **Supplier** Imagine, 6 Central Street, Manchester



Interplanetary influences

Tony Bridge returns to Adventure Soft's Rebel Planet – plus a sneak glimpse of Fergus McNeill's latest opus

Some weeks ago the Grand Elf had a look at *Rebel Planet* from Adventure Soft UK, lack of space that week meant that the look was more of a sidelong glance Here's the rest of the piece along with a (rather more than glancing I hope) look at a *Quill'd* game from a non-professional software house

I had a lot of fun with *Rebel Planet* the graphics are good to look at, with a certain of animation and the puzzles are interesting and complex without being stupidly opaque and obtuse I would still like to see more atmospheric descriptions, but I suppose that there has to be a trade-off somewhere between graphics and text – and the wait between command input and the re appearance of the cursor can be annoying particularly after playing a recent Level 9 opus in which its version of multi-tasking makes waits like this a thing of the past But the storyline is excellent and there are plenty of things to divert the attention like pressing buttons on the limcom strapped to your wrist (attends to certain functions as well as giving information on personal as well as mechanical status) and trying to open those damned cargo containers can be really frustrating

The £9 95 price tag means, as it should, that *Rebel Planet* is bug-free (as far as I could see) and that the packaging is good It is a pity that *Ram save/load* is not supported – but the extra commands and the flexibility of the language makes this story worth looking at

Terry Braverman will be known to Corner addicts from his contribution to the recently released *Ten Pack* from Automata the title of that story was *Royal Adventures of a Common Frog* a well written satire using the *Quill* (and in good company, I might add with Bob Frank lin's *Here be Tygers*)

That utility has been used again to write a story for his own label, Venturesoft the scenario of *The Eleventh Hour* concerns a bomb-scare at Harndges of London – of course, you, the bomb disposal expert have been volunteered to enter the store and defuse the bombs Bombs? Well these are the work of the mad janitor, who hasn't had a pay rise for many years and there is one on each floor set to explode after a certain time

If you happen to be on the same floor as an exploding bomb – bye bye otherwise you're okay for the moment, but you'll find the structure of the store weakened The janitor himself is wandering the empty store, babbling in his dementia and toting a loaded shotgun – waiting for a poor sucker, I mean bomb disposal expert such as yourself

The Eleventh Hour is also *Patch'd* and



The Boggit – see below for more McNeill details

Illustrated – the graphics are very good and quite up the standard of *Rebel Planet*, although the *Illustrator* doesn't allow for very fast drawing All the *Patch* sound effects (phone rings and so on) are pressed into service and these can get a little boring at times as they take up quite a lot of time

Although you can turn the pictures off, you are lumbered with the sound effects However, the program is blessed with *Ramsave* and load, as well as unique commands like *Bombs* (number defused) and *Time* (taken so far) Graphics may be switched on and off with the simple to remember *Pictures* or *Words* which is a lot better than *Gron* and *Groff* and other such concoctions

The adventure is quite large with lots of objects to be picked up and used Some are red herrings but most require careful manipulation and must be used in the correct sequence, which is where Ram memory comes in particularly handy

Although the location descriptions are rather brief atmosphere drips from the program two reasons for this – the feeling of being in a large department store is well created with all the usual nooks and crannies of the leather goods, the restaurant the paint store, the pharmacy general office, accounts departments and so on and on top of it all that janitor roving around, likely to appear at any moment and those bombs ticking, ticking away

Although I enjoyed the adventure immensely and found the ideas of the plot interesting and unusual (and at £3 99 it is certainly this side of good value) I had a few doubts about the tastefulness of the project what with bombs in large department stores, and Harndges being hardly an impenetrable disguise

Adventure Soft UK Distributed by US Gold, Unit 10 The Parkway Industrial Centre Heneage Street Birmingham B7
Venturesoft, 23 Aragon Close Kings Hedges Cambridge CB4 2SU

Fergus's latest

Now to an adventure that hasn't been released yet, in fact is still in the process of being written

Fergus McNeill can't sit still! Now that he has a superb hit with *The Boggit*, he has turned his attentions to more recent fantasy fiction *The Colour of Magic* is a novel by Terry Pratchett – I haven't read it yet but I have seen some of the game that Fergus has constructed around the book and it's another winner The two main characters are Rincewind and Twoflower but there is a grand parade of others including a piece of luggage that walks on a hundred legs and the old spectre himself, Death The story is spread over three parts, so if you want to be one jump ahead, start badgering your local library now for a copy

ADVENTURE HELPLINE

Robin of Sherwood on Spectrum. Where and how do I find Siward the Thief? How do I enter the grange? Peter Van Wingerden Dierenriem 24 3226 EC Hellevoetsluis, Holland Help offered on Lords of Time, Lords of Midnight, Doomdark s Revenge, Golden Apple, worm in Paradise, Emerald Isle

See-Kah of Assiah on Commodore 64. How do you escape from the castle when the huge bird arrives? Paul Stratton, 32 Hy Regt RA, BFPO 20

Starcross on Commodore 64 How do I get the blue rod from the silver sphere, and still have enough power in the gun to get to the control bubble? David Stewart 3 Avenue des Linottes 1160 Brussels, Belgium

Zork I on Commodore 64 What do I do with the brass bauble, and how do I finish the game? David Stewart 3 Avenue des Linottes 1160 Brussels Belgium

Zork III on Commodore 64. How do I get past the statues of the guardians? David Stewart, 3 Avenue des Linottes 1160 Brussels, Belgium

Snowball on Commodore 64. How do I wake the man to get the password? David Stewart. 3 Avenue des Linottes 1160 Brussels, Belgium

Exodus Ultima III on Commodore 64. I have mapped and searched all the dungeons but I cannot find the mark of the snake Help! David Stewart 3 Avenue des Linottes 1160 Brussels Belgium

Suspended on Commodore 64. I have replaced the faulty wire but I still cannot reset the system Also I cannot find the wire cutters. Please help David Stewart 3 Avenue des Linottes, 1160 Brussels Belgium

Zkul on Sinclair QL. How do I get across the underground lake, I can t find the ock Pete Coombes 2 Castledene Crescent Parkstone, Poole Dorset BH14 8DF

The Pawn on Sinclair QL. 1) How do I pass the alchemists? 2) How do I open the door under the tree? 3) What use are the red green and blue? Michael Scott 10 Hough Green, Chester, CH4 8JG

Robin of Sherwood on Amstrad. Where can you find the Holy Crest and where do you find the 400 gold pieces? Gavin Lennon Wattle Bridge PO Newton Butler, Co Fermanagh

System 15000 on Spectrum. I would like any information on playing the game that anyone can offer Steve Chapman 8 Oak Gardens Ivybridge Devon, PL21 0NB

Adventure Helpline

Going bananas? If you are stuck in an Adventure with nowhere to turn do not despair – help is at hand

Fill in the coupon explaining your problem send it to us and a fellow adventurer may be able to help

Remember – the system only works if those adventurers who have solved the puzzles get in touch Every week is Save An Adventurer Today (SAAT) week!

Adventure .... on (Micro) ....

Problem ....

Name ....

Address ....



Finding the Pharoah

Tony Kendle peeks into the mailbag and finds some pokes

Here s a letter from Alasdair MacDonald of King s Lynn concerning the new QL game from Talent *The Lost Pharoah* Knowing how much you like finding decent QL games I m sure you will find the following infinite lives poke invaluable

"To get the extra lives you need to write a slightly altered boot program which contains the required poke in it To see the original boot program just type ' copy mdv1_boot to scr '

Your new version should read

```
10 CLOSE#1 CLOSE
#2:MODE 8 c=RESPR
(RESPR(0)–187216)
c=187384 LBYTES
mdv1_pharao_scr,
134272 LBYTES mdv1_
code c POKE_W
191178 21418 CALL c
```

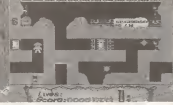
' Make sure you type POKE_W or it won t work

' A further way to avoid being killed in the game is to press ALL keys in KEYROW(1) – all four cursor keys space bar ENTER and back lash (top right of the keyboard) and lastly Escape This removes all baddies but if you get stuck you will be unable to abandon the game by pressing escape

'The game itself consists of a very large maze – I've visited at least a hundred screens so far I've now almost finished it – unfortunately some keys and the wall paintings which change colour and gain points only appear after one has visited a particular room or something so it s difficult to know where to look for the remaining keys Eventually you get to a stage where you re stuck having used up all your keys, not knowing where else to look

'I've also just completed Split Personalities on the C64 The technique for solving the game is to get lots of bonuses on the easier screens since every last picture takes so long and will undoubtably involve loss of at least one life The pictures are Reagan, Thatcher, Kinnock, Sir Clive, Sugar, Bogey (an awful picture), Charles and Di, Andy and Fergie and lastly Monroe To complete Monroe you have to get all the pieces from the left hand side and bottom row out in order but make sure there is an easy way for getting rid of bombs and if a piece comes out which isn't from the two edges mentioned don't crowd up the board with it – get rid of it

'It is an excellent game but nothing exciting happens when you have finished Monroe and the high score isn t even saved (I ve had around 300000) Incidentally the gun and bullet pair are worth saving for accumulation of points – put them aside and once you ve got most bonuses from the screen push them together and your bonus score is doubled Thanks for your helpful advice Alasdair write again soon



To finish this week here s a tip from the horse s mouth as it were, of Incentive Software – enter IAN as the high score on the Off The Hook version of Splat!! and you should find you have access to the cheat mode and thus every level

Charts

Top Twenty



1	(1)	Speed King	Mastertronic
2	(2)	Thrust	Firebird/Superior
3	(4)	Ghosts and Goblins	Elite
4	(4)	ACE	Cascade
5	(5)	Ninja Master	Firebird
6	(6)	Green Beret	Imagine
7	(15)	Kane	Mastertronic
8	(9)	Dragon's Lair	Software Projects
9	(–)	Knight Rider	Ocean
10	(6)	Ninja	Mastertronic
11	(14)	Video Olympics	Mastertronic
12	(18)	Formula One Simulator	Mastertronic
13	(10)	Molecule Man	Mastertronic
14	(7)	Hole in One	Mastertronic
15	(–)	Dan Dare	Virgin Games
16	(15)	Kick Start	Mastertronic
17	(20)	Dynamite Dan 2	Mirrorsoft
18	(16)	Jack the Nipper	Gremlin
19	(–)	Skool Daze	288 Classics
20	(13)	Leaderboard	US Gold

Figures compiled by Gallup/Microscope

Name that sci-fi movie still



Picture 1

The prizes of *Popular's* autumn competition this year are really hot! We've got five (yes, five) brand new Spectrum Plus 2 machines to give away to the top winners this time.

But don't despair if you just miss out on the first prizes, because the next ten winners will receive a Star Micronix STX-80 printer.

Then there are 50 Mastertronic Magnum joysticks to the runners-up. New on to the market, the Magnum is the joystick everyone's talking about at the moment.

Five Spectrum Plus 2s

What you have to do

Science Fiction movies are the theme of this competition which will run for five weeks. Each week, we'll print two still photographs from well-known SF films. All you have to do is identify them – it's as simple as that.

Don't send anything in yet, remember there are six more stills to come.

Study the photographs shown here carefully. If you think you can identify the films from which they were taken, then you're off and running. Keep this page handy – you'll need it in four weeks time.

Don't give up yet if you don't recognise the pictures – we just might give out the odd clue in the final instalment of the competition!

Picture 1 An easy one to get you started.

Picture 2 Which film featured these strange characters?

Picture 2

Ten Star Micronix printers

50 Magnum joysticks

First prize

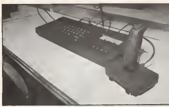
The long-awaited Sinclair/Amstrad machine is here, with all the best features of both the Spectrum and the CPC micros.

The Spectrum Plus 2 operates like a 128K Spectrum, but has a full travel keyboard, built in tape deck, RGB, RS 232 and MIDI ports and an expansion facility for microdrives.

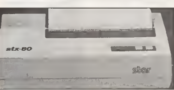
The Plus 2 also has twin joystick ports, and will have a range of disk drives and other peripherals available. Retail price is £149.

Second prize

Budget software champions Mastertronic have now come up with an excitingly advanced joystick which will make the most of your games-playing skills. Ergonomically designed for right- or left-handed players, the Magnum features high speed electronic switching, a fast-action trigger, counter-balanced 'pistol grip' handle, steel shaft and bearings and extra-long cable. Compatible with Commodore, Atari, Amstrad and Sinclair micros (with suitable adaptor), the Magnum normally retails at £12.50.



First prize: The Spectrum Plus 2
Five to be won
Second prize: The Star Micronix printer. Ten to go!
Third prize: The Magnum joysticks: 50 for the runner-ups





Promises, promises...

John Lettice on the wealth of new hardware at the show

Promises are going out of fashion, if last week's *PCW* show is anything to go by. Shows in years gone by always used to have a substantial contingent of starry eyed optimists, promising staggering new products Real Soon Now (RSN) but nowadays sadder (and sometimes wiser) manufacturers actually have the products finished, and on display. Some of them even have them in the shops.

Alan Sugar's Amstrad has been one of the main influences on this reformation of the micro market, and true to form the new PC range (see last week's issue for full details) was there in force, and allegedly on display in branches of Dixons.

Amstrad's stand was packed to capacity, giving the impression that someone in the heart of the throng was shouting "free money", but the draw was the fact that the new machines were more than living up to expectations.

> *"Amstrad's stand was packed to capacity . . . the new machines were more than living up to expectations"*

They're fast in operation, and running Digital Research's Gem windowing environment do a creditable impression of Apple's Macintosh. The machines' display controller is one of the major things that will make them stand out from the crowd, as even the monochrome versions will support graphics, while most entry-level PC clones will need a more sophisticated display controller to run a graphics package like Gem.

Until its rivals wise up and fit high-res controllers as standard Amstrad is liable to have the graphics field to itself, and will be flogging Gem for all it's worth in its sales pitch.

The Sinclair stand next door was less well-populated despite the presence of the new Spectrum Plus 2 and the Amstrad CPC machines, now apparently relegated to the games division.

The new Plus is a tidy implementation of the old Spectrum standard, and although purists will deplore its new colour scheme of Amstrad grey rather than Sinclair black the full travel keyboard and built-in tape recorder should make it a good seller this Christmas.

Acorn's new machine, the Master Compact, looks attractive, although it's pricey by the standards of the Amstrad PCW. The basic machine with single 3½ inch drive comes in at £441.25, a version bundled with monochrome monitor costs £537.85, while a colour monitor model will set you back £667.35. At these prices the Compacts aren't going to stop hearts round at Amstrad, but they should be of interest at least to Acorn enthusiasts.

Tatung's new machine, the Einstein 256, is a more overt challenge to the Brentwood contingent. It's priced at £444 for a 256K machine with single 3 inch drive and colour monitor, and although it's not directly compatible, ACC was displaying a £19.95 PCW emulator on Tatung's stand.

On top of this it's compatible with the previous version of the machine (now being knocked out for £229), and has an



The Spectrum Plus 2 should sell well this Christmas

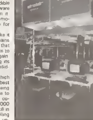


amazing all-singing, all-dancing video chip that should do the most incredible things, just as soon as the software houses figure out how to program it. This chip is also to feature in Memotech's new machine, which is due for launch shortly.

One machine that didn't quite make it to the show was the QL, which remains in limbo for the present. It appears that Amstrad was willing to sell the rights to the machine, but has backed off again. The company may just be keeping its options open, but could also be considering relaunching the machine.

CST's Thor upgrade for the QL, which currently seems to be the machine's best hope for survival was, however, being exhibited and he expects to be able to deliver with or without Amstrad's co-operation. The company claims 30,000 circuit boards for the machine are still in existence so feels it can continue selling the Thor, which is basically a QL upgrade for some time.

As predicted, Commodore used the show to launch the 64c, but as the company was in the Business rather than the Home Hall it fell to third party companies like distributor Lightning to show it. The Amiga was a little better catered for, acquiring a new high-res Mitsubishi colour printer that Commodore intends to sell bundled with the Amiga for £5,500. The company was also demonstrating an interactive video system for the machine, which it hopes will make its sales in vertical markets.



Amstrad's Sinclair stand



The Spectrum Plus 2

Atari launches the blitter chip

Duncan Evans tours the Atari village in search of new machines and software

The main revelation as far as hardware from **Atari** was concerned was the re-packaged machine consisting of a two megabyte ST with detachable keyboard, monochrome monitor and disc drive box (see page four for more details).

Also lurking in Sam Tramiel's office were the chunky looking prototypes of a 2080STS and 4160STS, officially launched today. Another item in the pipeline is a box containing a 68020 processor running drive which will simply plug into your ST and might be available in the second quarter of 1987.

The 520 STFM, the one with the built in disc drive and modulator, which was originally going to be released at the same time as the 520 STM but was then rescheduled for a September launch, was nowhere to be seen. However, according to Tramiel, it will be here in November, priced at or under the cost of an STM plus disc drive.

One product that was here was the blitter, the chip enables large chunks of graphics to be moved around at great speed. Atari had two machines, one with a blitter and one without, next to each other running a demo of a flock of flying birds. The machine with the blitter, which is of course what the Amiga possesses, produced an impressive, fast moving, more complex and very well animated display. Rather than just a chip on its own it will be sold in a set which you can simply plug into your 520 or 1040ST. It's not available anywhere yet, although it has an initial price tag of $150 (about £100) but should be in this country in November.

![Fleet Street Editor screenshot]

Fleet Street Editor

A contender for the desktop publishing market came from the combination of an ST, *Fleet Street Editor* (more on FSE elsewhere in this report) and a laser printer from **Quadram** called, appropriately enough, Quadlaser. This machine has 1.5 megabytes of memory, a printing speed of eight pages a minute at 300 × 300 dpi per page, Centronics and RS232C interfaces and a price of around £5000.

If it's a really impressive hardware peripheral you're after, then *K-Max* from **Kuma Computers** should fit the bill. *K-Max* consists of box which is connected to the cartridge port of an ST, containing an interface board, dual processor board with two Inmos T414 transputers and two blocks of 256k Ram. Each T414 is a 7.5 million instructions per second 32 bit Risc (Reduced Instruction Set Computer) parallel processor. The price range kicks off at £1450.

Haba Systems had a video digitiser from the German company Print Technik, on display which enabled you to digitise pictures from a camera or video recorder. Watching the thing being demonstrated, it only took around four seconds for a screen picture to appear once the video camera was rolling. The camera is simply plugged into the digitiser, itself plugged into the ST via the Centronics interface, and then the special software is run. The cost of this device, soon to be reviewed in *Popular*, is £249.95.

On the games front from **Eidersoft Software** launched the most titles at one go for the ST, and all but one of them were finished. *ST Karate* featured digitised sound (which was inaudible because of the noise coming from the other games), single and two player option, multiple

continued on page 26

◀ continued from page 25

graphics and some very good scenery backgrounds

ST Protecter was a *Defender* style game with a mountainous skyline (as opposed to the normal line drawing) but can hardly be said to be wonderfully exciting

Space Station looked okay even if it did resemble a poor rendition of *V* on the 64c *Fire Blaster* was basically a shoot the things coming down from the top of the screen game and then there was a platform game with very small if colourful, graphics

The prices ranged from £24 95 to £29 95 which was a bit on the high side even if there aren't any plain shoot em ups on the ST yet

The most impressive games came from **Psygnosis,** authors of *Brattacas Deep Space* had some excellant graphic scenes namely one featuring a close up of a Death Star', seemed to be very much in the *Star Raiders* department I say seemed because the game kept crashing early on when someone tried to give me a demonstration He assured me it would work in the end and would cost £34 95

The other product from the Liverpool lads was *Arena* a sporting events game, which had *Brattacas* sized character graphics set against a stadium type backdrop Eight events were on offer, including running javelin and shot put Once an event is started and you don't start beating the hell out of the keyboard speech bubbles appear from your athlete requesting, amongst many other things, that someone wake you up If you perform something fairly badly, than another chatacter appears on screen and, well takes the mickey is the polite expression Costing a modest (in ST terms) £29 95, *Arena* is one to look out for

Microdeal had various pieces of new software on display, most of which, they reluctantly admitted weren't finished yet Among these were *Electronic Pool,* not graphically brilliant but seemed realistic in play and *Pinball*



ST Protector

Pinball has the facility to design and colour your own pinball table Graphically speaking, the best thing from Microdeal was *Karate Kid 2* Unfortunately the game hasn't been written yet and all they had on display were some very good pictures which will be in it The game should follow the basic plot of the film rather than just being of the hack, chop, next variety The release is tenuously scheduled for release in November

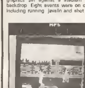
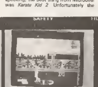
Mirrorsoft also announced *Strike Force Harrier* and *The Bermuda Project*

The eight-bit Atari s were represented in the Atari village, but only just **Red Rat Software** had on display the *Panic Express* (disc £5 95 tape £3 95) *Screaming Wings* (£9 95/£7 95) and *A Day at the Races* (£9 95/£7 95) Announced were *Freaky Factory Rocket Repairmen War Copter Astro Droid Demolition Derby, Treasure Island Dragon's Breath Domain of the Undead* and *Escape from Planet X*

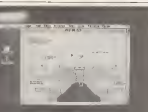
Red Rat also intends to convert *Screaming Wings* to the ST to retail at £19 95

Finally on the games front, Atari had some of its prehistoric games consoles the 2600 s, over in one corner, happily running cartridges from a large collection

GST, authors of *1st Word* bundled with the ST at the moment, were showing the follow up, imaginatively called *1st Word Plus* This version kept the same basic style as its predecessor but incorporated a number of new features including a spelling checker The most interesting feature, beyond the merely

Arena and *Deep Space* for the Atari ST



cosmetic additions, was the facility to allow graphics from any Gem application to be included in the document There is an accessory which comes with the program called *Snapshot* which 'snaps' a picture of any Gem program and stores the screen in a GST packed format Once saved the picture can then be loaded and incorporated into any document

Also from the GST stable were *1st Mail* a mail merge program for £29 95 C Compiler for £59 95 *Macro Assembler* for £39 95 and a *Fractal Generator* costing £19 95

Cashlink Software was displaying Cashlink *ST Accounts* which claimed to be a complete accounts department It handles all credit accounts with full accounting ledgers and maintains records for your stocks using stock control This comprehensive accounts package would set you back £295 (plus VAT)

For those interested in other languages **Prospero Software** was showing its Fortran-77 and Pascal compilers The Fortran-77 was a full Ansi X3 9 1978 Fortran compiler for the ST featuring 7 and 16 digit precision floating point, four byte integers and full Gem AES and VDI bindings

Pro Pascal is a complete Ansi 770X3 97 Standard Pascal compiler with the same sort of features found in the Fortran compiler Both programs cost £129 (plus VAT)



ST Karate





ST Karate

Marbles, madness and Scooby Doo

John Cook with the fun and games part of the show

The first day of PCW – the TV personalities, the glitter, the razzamatazz, the hum of business deals being closed, the shouts of the workmen nailing together unfinished stands, the burst of white noise as pre-production programs crash spectacularly

This is the stuff shows are made of and this year was no exception The big trend (as far as games software goes) was of course coin-op conversions – even **The Edge** is getting in on the act with *Shao Lin's Road*, from Konami, which was the follow-up to the game made successful on home micros by **Imagine,** *Yie Ar Kung Fu* "We want to prove we can do coin-op conversions as well as anyone," said Tim Langdell, "better even!"

Such bullish optimism was a hallmark of most exhibitors "Things are looking up" was the concensus Certainly a change from the gloom and despondency displayed at some points last year So what did you miss if you weren't there?

Activision – while vying for the hotly contested prize for "Most Impenetrable Press Release of PCW 1986" – had a wide range of software under its own name and under the increasing number of associated labels, the newest of which is **Advents**

This is a label dedicated to the production of graphic/text adventures, the first of which is *Chicago* In this one you play the part of Rats Muldano – recently released from gaol What makes this effort particularly noteworthy is the fact that it was written by **The Ram Jam Corporation** using its custom designed adventure writing system *The Biro* The warped mind of Ram Jam mastermind

Marble Construction Set from Melbourne House

George Stone will ensure that this is going to be one to watch out for Available on Spectrum, C64, Amstrad CPC, Amstrad PCW and Atari ST soon

Loricels had its newest, Bactron This is a 3D perspective job on the Amstrad CPC that has you fighting to keep yourself healthy while you're being attacked by sundry bacteria and viruses The ideal program for hypochondriacs Out later on in the month

Hacker II was impressive With several video displays functioning on screen at once this one looks good Out on all major formats soon

Howard the Duck was in evidence on the 64 being based on the film which was based on the comic book and was using his unique "quack-fu" skills to battle his way through a treacherous volcanic island

Wackier still, try *Tass Times in Tonetown* as an experiment in alternative reality adventuring Utterly weird disc based entertainment on CBM 64, Apple II, PC, Mac Amiga and ST

What has David Crane been doing since *Little Computer People? Transformers* is the answer – the game of the toy One of a number of toy/comic spin-offs this year, it's out for Commodore owners in October

Sports simulation were glued to the **Gamestar** section – with the unveiling of three new programs from the US, *Championship Golf, Championship Basketball* and *Championship Baseball* while **System 3** fans were glued to the wall – reading the promotional posters for *The Last Ninja Bangkok Knights* and *Domination* The lack of any working demos suggests that the "available shortly" tag should be interpreted as "don't hold your breath"

The battle of the robots could be coming up on your computer soon – Activision's *Transformers* vs **Ariolasoft's** *Gobots* Although Ariola might be behind in the programming stakes (the licensing deal was only very recently signed) it did have the advantage of having a fully functioning robot actually present on their stand

Other highlights of the stand included hands on demos of the flagship of the

Bactron, courtesy of Activision/Loricels

new Reaktor label, *Deactivators* and at last *Marble Madness* on the 64

With the launch of the Amstrad PC – Ariola also had *Pinball Construction*, *Music Construction* and *Seven Cities of Gold* for the beast. Queue here.

Alligata was strategically placed near the lower ground floor bar – allowing persons to stagger out and try their hand at *Pub Games*, on the Spectrum, C64 and Amstrad machines with darts, skittles, bar billiards, table football, dominoes, pontoon and poker to choose from. Announcements included the next Tony Crowther game on Commodore, *Kettle* (is the lad going mad we ask ourselves?) and a two game package for the PCW 8256/8512 *Guardian* and *Blagger*. Full reviews appearing here very soon! Alligata is also claiming a first – chess on MSX in the shape of *Cyrus II* (also on Spectrum). Unless you know differently, of course.

Anco was displaying a wide selection of games – but the monitor that was being given the closest inspection was *Strip Poker* on the Atari ST. Described as "sizzling entertainment" – Anco precariously avoids the charge of sexism by making available data discs containing extra opponents, both male and female. The question of the program's naffness, however, is never in doubt.

Addictive was headlining with *Headcoach* on Spectrum, but anyone that saw the *Kirel* CPC conversion cannot fail to have been impressed. Out soon – so Amstrad arcade/puzzle addicts, start saving.

Interesting things you can do with your Spectrum number 1097 – use it to help you pass your driving test. The program of the same name, (a Supersoft release, but on the **Audiogenic** stand) takes you through 40 lessons, with graphics, giving you driving tips and asking you questions. Based on an existing best selling book, it's not as crazy as it sounds.

On the **Beyond** stand, the organised crowds of Trekies running over to the left, then the right, then throwing themselves on the ground, failed to appear. Shame, but early video demos of the game were present – looking very nice indeed. Other Beyond games were on display, such as *Dante's Inferno* from Denton and the new *Best of Beyond* compilations.



The cheerful chappies from **CDS** were keeping a lowish profile, but had *Colossus Bridge* on display for CPCs plus plenty of existing software to play hands-on ... which cannot be said of **CRL**. An impressive bank of 20 video screens – and that's it. It was OK for people "in the know" – who were ushered into the CRL inner sanctum for VIP treatment, but what about everybody else?

> *"If Batman was the death of the idea that you couldn't write arcade games for the Joyce, then this must be the equivalent of jumping up and down on the grave"*

Displayed on the screens (carefully placed at neck straining height, so it seemed – probably for the same reason you don't get comfy chairs at Macdonalds) was, amongst other things *Cyborg*, and CRL's *3 D Game Maker*, which allows you to create your own *Knight Lore* type games.

Not much hands-on stuff at the **Durell** stand either, but certainly the promise of some excellent new releases, most impressive of which was *Thanatos*.

Programmed by Mike Richardson (author of *Combat Lynx*, *Turbo Esprit*, et al) the central character you control in this game is a giant dragon. The animation of this main sprite is stunning, and if the rest of the program is up to the demo, Spectrum owners should be queuing up to buy this one at the end of the month.

Also announced at the show, a Durell compilation *The Big 4 – Combat Lynx*, *Critical Mass*, *Turbo Esprit* and *Saboteur* on Spectrum, CBM 64 and Amstrad CPC – all formats £9.95

Digital Integration has taken two years to write *TT Racer* – and the finished product was there on Spectrum, together with hunky Suzuki racing bike. Just as good and twice as unexpected, *Tomahawk* was up and running the Amstrad PCW. If *Batman* was the death of the idea that you couldn't write arcade games for the Joyce, then this must be the equivalent of jumping up and down on the grave.

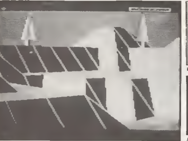
Domark officially released *Trivial Pursuit* – the computer game – and with Young Player, Baby Boomer and Genus II questions planned, this one will run and run. Watch out for their game based on the next James Bond film, due for release next Spring. And when we say "watch out"...

Eyes were on the few screens available for *Fairlight II* subtitled *A Trail of Darkness* from **The Edge**. Specifically written with the Spectrum 128/Plus 2 in mind (although there is a multi-load 48K version) improved graphics and outdoor locations have been promised.

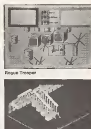
Colourful 3-D was in evidence on the Amstrad CPC in the shape of *Paltron* – written by ex-Virgin programmer Charles Goodwin.

Equal first (with *Gauntlet* on the US Gold stand) for the most queued up at





Sentinel



Rogue Trooper

Nosferatu

to-play coin-op was *Space Harrier* – supplied by Elite. Not much sign of the game yet, but the hydraulically operated stand alone was a massive hit.

Available to play – *Scooby Doo, 1941*, and Commodore *Paperboy*, all up to the usual standard.

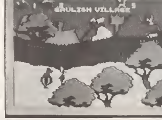
Electric Dreams has a massive white pyramid dominating their stand – what some executives will do to save buying a new packet of razor blades. Bags of new stuff though. Two licences to produce conversions of the old Atari classics, *Tempest* and *Star Raiders II* and an amazing looking 'Gauntlet' type game, *Dauntless* to name but two – and news of two film tie-ins, *Big Trouble in Little China* and *Aliens II*.

Firebird were out in force, with first public viewings of megagames to be *Cholo* and *Sentinel* – both out first on BBC. *Druid* made quite an impression (another game in the 'Gauntlet' mold) and head and shoulders above the other Silver releases *Gyron Arena*. If you never bought the original – try this cut down version. It's great!

Sharing the stand were **Odin,** with many of their newest releases, including the stylish *Heartland,* and a demo of a new autumn release, *Hyperball*.

Dremlin were well represented the most interesting program being a Bounder derivative *Trailblazer*. It's another 'bounce on the squares or fall off' job granted, but from a different perspective – the 64 version has a great two player simultaneous race version.

Glum faces at the **Mikro-Gen** stand, as the *PCW* Show organisers decided that it was too dangerous to have members of the SAS hanging round the stand, promoting the yet to be released, *SAS Strike Force*. The appearance of teenage pash *Ricky Steel*, complete with



Asterix

prosthesis, was little compensation it seems – or did it have something to do with the fact that Brian Jacks was on the **Martech** stand, promoting *Uchi-Mata?*

The organisers did, however, allow Mikro-Gen to release *Frostbyte* on Amstrad CPC an arcade adventure featuring a liquorice allsort as the main character. Identify with that, kids.

After a relatively silent summer, a flurry of activity from **Melbourne House,** with *Fist II* taking the starring role, closely followed up by *Asterix and the Magic Cauldron* amongst others. Far from being just a load of old Gauls, the game genuinely seemed to capture the spirit of those excellent comic books – well worth looking out for. As for *Marble Madness Construction* ... take me to it.

Pride of place was given to the Magnum joystick on the **Mastertronic** stand, with games taking a second place to the strangely shaped beast as it perched resplendent beneath the perspex. The less awe struck, however, would have *Flash Gordon* – coming to your Commodore soon.

Mirrorsoft was out in force with a number of recent and future releases on display. With *Icon Jon,* it asks the philosophically daunting question, "What happens to a program when the computer gets turned off?"

As a program trapped inside a computer due to shut down in thirty minutes you must scurry around collecting and manipulating objects – all under Icon control of course. A nice looking game on Amstrad CPC – out soon. Other thought provoking masterpieces are

rumoured to include a title in which you must stack as many angels as possible on the head of a pin

With **Novagen**, the *Mercenary* machine rolls on with an excellent SI version being launched at the show, an Amstrad CPC version due out in October and a Spectrum conversion out by Christmas. Trivia collectors will be pleased to learn there are now a total of 15 different machine/language *Mercenary's*. As for *Mercenary II* – expect that mid '87 – as Novagen's Tim Bosher says, '*Mercenary I* is a hard act to follow

On the **Ocean/Imagine** stand, the sharp eyed could spot the one we've all been waiting and waiting, and waiting, and waiting for *Street Hawk* was seen up and running on Amstrad – and looked very impressive to boot

Good news for C16/Plus 4 owners – versions of *Rambo*, *Green Beret* and *Hyper Sports* are on the way

If only Eddie Waring were here to see it – that game without frontiers, *It's a Knockout* has finally reached the home computer (Commodore 64 and Atari only)

No Spectrum version, which is a pity as a decent attribute clash would have perfectly replicated Stuart Hall's usual shirt/tie combination

Palace Software releases are few and far between, but they tend to be good. Demoed at the show this year was their next release *The Sacred Armour of Antriad*. The plot comes straight out of pulp comic fiction, which isn't surprising, since a comic artist, Dan Malone designed it. Set in a post holocaust world where the primitive survivors have been enslaved by an alien race (never rains but it pours eh?)

Your quest as Tal, is to find the Sacred Armour and defeat them single handed. This is the stuff arcade adventures are made of. On Commodore 64 and Spectrum in October, Amstrad CPC by Christmas

Piranha had plenty of bite on its stand – a tankful of them in fact, complete with bones stripped clean of flesh by the little beasties. The latest release *Trap Door* was in evidence (play the game, eat the record) – and on preview was *Rogue Trooper* and a few beautifully detailed screens from *Nosferatu*

Rainbird had a good show with pride of place being taken by *Starglider* running on the ST. Although not quite finished yet, an advanced demo was up and running and performing very well indeed. Vector graphics space games will never be the same again

Other highlights *Tracker*, billed as an arcade/strategy wargame – and a game that seems to have been hanging around for ages one way and another – now on Commodore 64 – *The Pawn*

US Gold have kept the video makers busy this summer – but not a hands on home micro game to be seen. While these promotional devices certainly have great advantages for the exhibitor – videos of pre-production games have never been known to crash for example – there were one or two murmers of discontent on this end, to be fair, other stands, where you couldn't get your hands on a working game

Never the-less, US Gold has a lot of good stuff coming out this autumn, with the highlights being *Gauntlet* (on Spectrum, CBM 64, Amstrad CPC, Atari, ST, PC and Amiga) *Super Cycle* (motor racing from the guys that brought you *Pole Position* Epyx) and *AcroJet* – what looks like an astounding flight simulator by Microprose

The first **US Gold/Vortex** tie-up has produced *Revolution*, a game which looks as challenging and stylish as that previous Vortex hit *Highway Encounter*. Another complex arcade puzzle with some great 3D perspective effects







Top photo At the *PCW* show

Photo left Mastertronic's macho Magnum joystick

Photo right Denby, Ariolasoft's promotional robot

Infinite variety on the 8256

Christina Erskine leaves the crowds round the Amstrad PC to view the new PCW 8256/8512 products

If the first public showing of Amstrad s PC range drew some attention away from the now well-established PCW machines it made no difference to the third party companies

The sheer variety of software and add-ons being developed and launched far exceeds the expectations of a year ago, when the 8256 word processor was unveiled

Graphics? No problem Take your pick from a light pen mice, a forthcoming graph pad, or Mirrorsoft's ambitious graphic operating system all of which were being publicised at the show

Electric Studio s light pen (for a full review see *Popular* Supplement, September 4) plugs directly into the PCW s expansion port and comes complete with *Art* a graphics software package With *Art* and the pen most standard graphics features are supported pencil, spray can, multi-brush and fill effects, plus, a variety of polygons, and various copying moving of pictures etc, options A GSX driver is included to enable the pen to be used with *DR Draw*

Art is also supplied with the mouse package and adds facilities to expand and contract screen areas and a horizontal and vertical lock for the mouse

Curiously, Electric Studio is also providing a joystick slot on the mouse interface and a joystick driver program on each disc Just in case the mouse doesn t win you over, I suppose

The *Art* software is being pressed to various uses Forthcoming Electric Studio products include a PCW video digitiser, and a font module, both of which are compatible with and expected to be used with the *Art* package

The light pen costs £79 95, the mouse pack £129 95 Electric Studio can be contacted at Unit 13, The Business Centre Avenue One, Letchworth, Herts

Another PCW mouse comes from Kempston While the mouse itself has been around for some time Kempston launched the PCW interface at the show It s early days yet for details of the software, but the package is set to cost £79 95 AMX is also planning a version of its mouse and interface for the PCW 8256/8512

The graph pad mentioned above was on display courtesy of Grafsales Together with the company s G3 software Grafpad 3 offers a professional CAD system The pad features include line drawing, rectangles circles, arcs zooming and panning rotation and tilt Special defining symbols can be created and saved Hard copy, obviously, can be dumped to the PCW printer, but additional driver routines must be bought for plotters

Grafsales is also making this product available for the Commodore 64 and hoping to link it with Geos Grafpad 3 is also ready for the PC1512 (and thus other IBM compatibles), the CPC range and the BBC Master series

Mirrorsoft's *Graphics Operating System* is still very much in the embryonic stage, but when released, will provide programmers with a set of graphic tools on disc Features include all the usuals, plus character drawing to any screen pixel, ellipses windowing and rotation

Mirrorsoft was also showing a demonstration of *Fleet Street Publisher* on the PCW machines

This is *Fleet Street Editor* but an echelon higher in that more sophisticated newsletters can be written – to the extent that the *Fleet Street* series can begin to approach a typesetting machine level See elsewhere in this report for more on *FSE*

More details on Mirrorsoft s products can be obtained from the company at Maxwell House, Worship Street, London EC2

Publishing type programs are much in vogue at the moment, with several font packages – to enable print out in a variety of different typefaces – being exhibited

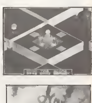
One such is Gemini s *Fontgem* which gives a choice of eight different printing styles and avoids the all too usual pitfall of offering typefaces which have a novelty value only, and are generally illegible

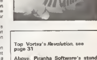
But the main asset of *Fontgem* is that it is compatible with both *Locoscript* and CP/M programs

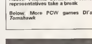
Also new from Gemini is *Taxgem*, a beat the Inland Revenue to it program *Taxgem* enables you to work out your tax liability for the year a depressing occupation that I doubt is made any happier by doing it faster than on the back of an envelope

Both Gemini products are £19 95 Gemini is at Gemini House Concorde Road, Exmouth EX8 4RS

The flurry of games being released on the machine about two months back (*Batman Graham Gooch's Test Cricket, Fairlight,* etc) seems to have abated somewhat but Interceptor is converting its latest adventure *Aftershock* (anyone know what to do with the ceiling panel right at the beginning?), and Digital Integration has put its helicopter simulation, *Tomahawk* on to the machine *Aftershock* will cost £17 95 *Tomahawk* £19 95







Top Vortex's *Revolution*, see page 31

Above Piranha Software's stand representatives take a break

Below More PCW games DI's *Tomahawk*





Read all about it

Mirrorsoft's Fleet Street Editor programs appeared on no less than three show stands. Christina Erskine finds out why

Mirrorsoft's plans for its *Fleet Street Editor* series were taking a solid shape at the show The BBC version released earlier this year, was very much a print your own club newsletter with help from some of the stored graphics affair *Fleet Streets* demonstrated for the PCW 8256/8512, Atari ST and IBM PC compatibles (thus including you know-what) use the more powerful features of the machines to their best effect

The series will include two labels, *Fleet Street Editors* and *Fleet Street Publishers*

Put simply, *Editors* specifically cater for one page news-sheets while *Publishers* cater for multiple page numbering Some of the machines will have both *Editor* and *Publisher* versions.

On display last week was a scrolling demo of *PCW FS Publisher* still in embryonic stages a very nearly finished *ST Publisher* and a finished *IBM Publisher* plus laser printer

When released the ST version should be a very professional package Within its text output options include facilities for point sizes to the nearest quarter, measurements in millimetres, inches or ems half tones eight different fonts, plus a font designer, a hyphenation dictionary and kerning (a thoroughly complicated process dealing with the spacing between individual characters) It will also have facilities for freehand graphic drawings for its illustrations and sizing and scaling for those graphics

For the ST, three versions are planned an *Editor* a *Publisher* which can be linked to a laser printer, and a *Publisher* which can become a typesetting workstation

The PCW version is being developed go a very highly sophisticated specification, with features similar to that of the ST version At present, however, its output is necessarily geared to the PCW's printer Again more than one version is planned an *Editor* and a *Publisher* For Amstrad CPC owners a *Fleet Street Editor* is planned

The point of all this is to build up the range so that it can be used by not only individuals with club newsletters, etc,

Created with Fleet Street Editor / PC

NEWS from

Meet the new men on the Southern Beat

Pack Flat Crates Take a Load off Your Mind

from MIRRORSOFT

but also professionally in liaison with typesetters and to sell to hardware manufacturers on an OEM (Original Equipment Manufacturer) basis

Furniture

by Richard and Jackie Gain

If you ever get the urge to move the furniture around to give a room a new look it can take hours trying out the various combinations, not to mention the effort involved. This program will hopefully solve these problems.

Start by typing in the program and saving it with *Goto 9000* if you have microdrives or *Goto 9100* if not.

Now run the program, select option one and enter details of the room(s) by following the instructions on screen.

Next it's the turn of the furniture, and these are represented as rectangles for simplicity.

Once the initial preparations are completed selecting option three allows you to move the furniture around to your heart's content. Use N for the next item until you arrive at the desired piece then use S to select that item. You now have the choice of 5/6/7/8 for moving the item and 9 to rotate through 90 degrees.

S changes the step size used when something is moved and finally O fixes an item at its present location. Another menu will now appear and pressing C will send the display to the printer. N will allow you to move the next piece of furniture while F returns you to the main menu.

The second part of the listing will be given next week.

```
 1 POKE 23658,8: REM CAPS ON
100 DIM S(4,2)
110 DIM F(40,4)
120 DIM F$(40,16)
130 LET FC=0: LET S=1
140 DIM R$(3,10)
1000 REM MENU
1010 CLS : PRINT AT 0,10;"FURNITURE"
1020 PRINT AT 6,4;"1: DESIGN ROOM"
1030 PRINT AT 8,4;"2: DESIGN FURNITURE"
1040 PRINT AT 10,4;"3: MOVE FURNITURE"
1050 PRINT AT 12,4;"4: SAVE ROOM DATA"
1060 PRINT AT 14,4;"5: LOAD ROOM DATA"
1070 PRINT AT 18,8;"SELECT NOW!!"
1100 LET I$=INKEY$: IF I$="" THEN GO TO
 1100
1110 IF I$<"1" OR I$>"5" THEN GO TO 110
0
1120 GO TO 1000+1000*VAL I$
2000 REM DESIGN ROOM
2010 CLS
2030 PRINT #0;AT 1,0;"BEGIN AT TOP LEFT
CORNER": PLOT 0,175: PAUSE 100
2040 LET S=1
2050 PRINT #0;AT 0,0;"PRESS 5/6/7 OR 8 F
OR DIRECTION OF NEXT WALL - 0 TO F
INISH"
2060 LET I$=INKEY$: IF I$="" THEN GO TO
 2060
2070 IF I$="0" THEN LET S=S-1: GO TO 10
00
2080 IF I$<"5" OR I$>"8" THEN GO TO 206
0
2090 IF I$="5" THEN LET X=-1: LET Y=0
2100 IF I$="6" THEN LET X=0: LET Y=-1
2110 IF I$="7" THEN LET X=0: LET Y=1
2120 IF I$="8" THEN LET X=1: LET Y=0
2130 INPUT "ENTER WALL LENGTH (MAX 32x22
 FT)";"FEET= ";FT,"INCHES= ";IN
2140 LET PIX=INT (6*FT+2*IN/3)
2150 LET X=X*PIX: LET Y=Y*PIX
2160 DRAW X,Y
2170 LET R(S,1)=X: LET R(S,2)=Y
2180 LET S=S+1
2190 GO TO 2050
2500 REM DRAW ROOM SO FAR
2510 CLS : PLOT 0,175
2520 FOR N=1 TO S
2530 DRAW R(N,1),R(N,2)
2540 NEXT N
2550 FOR N=1 TO FC
2560 IF F$(N,16)<>"*" THEN GO TO 2600
2570 LET S1=F(N,1): LET S2=F(N,2)
2580 LET X=F(N,3): LET Y=F(N,4): GO SUB
4800
2590 PRINT AT 22-INT ( ;S) ;INT ( ;
2600 NEXT N: RETURN
3000 REM DESIGN FURNITURE
3010 CLS : LET FC=FC+1
3020 INPUT "ENTER SIDE 1 LENGTH (INCHES)
",S1
3030 INPUT "ENTER SIDE 2 LENGTH (INCHES)
",S2
3040 LET F(FC,1)=2*S1/3
3050 LET F(FC,2)=2*S2/3
3060 INPUT "ENTER NAME OF FURNITURE",F$(
FC)
3070 PLOT 0,175: DRAW S1,0: DRAW 0,-S2:
DRAW -S1,0: DRAW 0,S2
3080 PRINT #0;AT 0,0;"PRESS 1 FOR MORE
- 0 TO FINISH"
3100 IF INKEY$="1" THEN GO TO 3010
3110 IF INKEY$="0" THEN GO TO 1000
3120 GO TO 3100
4000 REM SELECT FURNITURE
4010 GO SUB 2500: LET STEP=1: LET FC1=1
4020 PRINT #0;AT 0,0;"PRESS N FOR NEXT O
R S TO SELECT";FC1;" ";F$(FC1);"  "
4030 IF INKEY$<>"" THEN GO TO 4030
4040 LET I$=INKEY$: IF I$="" THEN GO TO
 4040
4050 IF I$="S" THEN GO TO 4100
4060 IF I$<>"N" THEN GO TO 4020
4070 LET FC1=FC1+1: IF FC1>FC THEN LET
FC1=1
```


Bigtext



by Steve Dunn

This small utility program allows text of any width or height to be printed to a hi-res and multicolour screen. The text can also be highlighted, printed upside down, left to right and textured.

To use this program it must be entered as a subroutine at the end of your own programs and called with a *Gosub* after setting up certain variables as follows:

XP and *YP* are the starting coordinates of the text.

W and *L* are the width and length of the text and have values of 1–100.

With the following variables a value of zero cancels and a value of one sets a feature:

RUF gives textured print
IV gives highlight print
UD gives upside down print
LR gives left to right print
LC gives lower case letters

After the variables have been set you must select a graphics mode and *Gosub* the line number where you have placed the utility.

In the listing lines 30 to 280 are a demo only.


```
30 GRAPHIC 1 1   REM ** GRAPHIC MODE **
40 XP=0 YP=0   REM ** X & Y CO-ORDINATES **
50 LP=0 UD=0 REM ** LEFT TO RIGHT & UPSIDE DOWN CANCELED **
60 L=3 W=2 REM ** LENGTH AND WIDTH **
70 IV=0   REM ** INVERTED OFF **
80 A$= BIGTEXT BY STEVE.D   REM ** TEXT TO BE PRINTED **
90 GOSUB 1000   REM ** EXECUTE BIGTEXT PROGRAM **
100
110 IV=1   REM ** INVERTED ON **
120 XP=100 YP=100   REM ** X & Y CO-ORDS **
130 A$= INVERTED   REM ** TEXT **
140 GOSUB 1000
150 IV=0 LP=1
160 A$= LEFT TO RIGHT
170 W=1 L=1
175 XP=0 YP=100
180 GOSUB 1000
190 LP=0=0 UD=1
200 A$= UPSIDE DOWN
210 XP=150 YP=100
220 GOSUB 1000
230 XP=150 YP=100
240 UD=0 LC=1
250 A$= LOWER CASE
260 GOSUB 1000
270 LC=1
280 END
1000 FOR I=1 TO LEN(A$ ) Z=ASC(MID$(A$ 1 1
1010 IFCCZ>=64 ANDCCZ <=95THEN BASE=DEC("D000")
1020 IFCCZ>=32ANDC Z<=63 THENBASE=DEC( D100    V=32
1030 IFCCZ>=160 AND CZ<=191 THEN BASE=DEC( D400 ) V=160
1040 IFCCZ>=192ANDCCZ<=223THENBASE=DEC( D200 ) V=192
1050 IFIV=1 THEN BASE=BASE+DEC  4 0")
1060 IF LC=1 THEN BASE=BASE+DEC  800"
1070 BANK 14 MEM= INT(C Z  V )*8+BASE
1080 FOR Y=0 TO 7 A(Y)=PEEK(MEM+Y) NEXT
1090 FOR X=0 TO 7 CHANGE=.5 IFLP=1 THEN FORY=0 TO 7 ELSE FOR Y=7 TO 0 STEP -1
1100 CHANGE=CHANGE*2 TEMP=(   -Y )  AND CHANGE IFTEMP<>0 THEN BEGIN
1110 IF RUP=1 THEN ROT=INT(RND(1)*2") ELSE ROT=0
1120 IFUD 1THENY2=YP+ (  8* *2*2  8 -Y *L  ELSE Y2=YP+  X)*L
1130 DO   F+ 1 1 *(8*W) + Y*W +N Y2,XP+ 1 1 *
W*W  + Y*W   Y2+L ROT 1
1140 BEND
1141 NEXT
1142 NEXT
1143 NEXT
1144 RETURN
```


Mushroom Mania

by Jonathan Temple

This week features the final part of the Mushroom Mania listing. The Z and X keys move your spray can about whilst Return fires the spray. There are five different speeds and two skill levels. You start off with three lives and are awarded an extra one after completing the first screen.



The program will also run on the Electron if the following changes are made. Delete lines 1030–1120 and replace them with –

*1030 FOR K%=1TO45+J%*15*
VDU31,RND(40)-1,RND(27)+2,224
NEXT

```
1820 LDA #&41:JSR oswrch
1830 LDA #225:JSR oswrch
1840 .return
1850 RTS
1860 .psmall
1870 LDA #228:JSR oswrch
1880 LDA #229:JMP check
1890 .pspider
1900 LDA #230:JSR check
1910 LDA #231:JSR check
1920 LDA #232
1930 .check
1940 PHA:JSR store:PLA
1950 CPY #129:BCC ncert1
1960 CPX #132:BCS ncert1
1970 LDA #1:STA &414:RTS
1980 .ncert1
1990 JMP oswrch
2000 .read
2010 LDA #31:JSR oswrch
2020 TXA:JSR oswrch
2030 TYA:JSR oswrch
2040 .store
2050 LDA #135:JSR osbyte
2060 STX &40C:RTS
2070 ]:NEXT
2080 ENDPROC
2100 DEFPROCtitles
2110 VDU 19 3,5;0;0;12
2120 PRINT TAB(15)"MUSHROOM MANIA"
2130 RESTORE 2360
2140 FOR N=1 TO 6:READ C
2150 VDU 31,19 N*2+2,17,C
2160 REPEAT READ M:VDU M+224
2170 UNTIL M=-1:READ P:VDU 17,2
2180 PRINTTAB(19,N*2+2 "...  "TAB(27,N*2+2) points"
2190 NEXT:*FX 2 2,32
2200 PRINTTAB(10,26)"Press SPACE BAR to play"
2210 VDU 17,3:REPEAT
2220 PRINTTAB(10,28)"Sound effects (Y/N) :  ,CHR$(sound)
2230 IF sound=78 THEN *FX 210 1
2240 IF sound=89 THEN *FX 210
2250 PRINTTAB 10,2  Speed  -
2260 VDU 31,30,22,58 32 Level
2270 PRINTTAB(   22)"Skill  evel (A-B)"
2280 VDU 31 30 22,58 32,Y%+64
2290 G=GET
2300 IF G>48 IF G<54 L%=G-48
2310 IF G=65 OR G=66 Y%=G-64
2320 IF G=78 OR G=89 sound=G
2330 UNTIL G=32
2340 ENDPROC
2360 DATA 1,0,-1,5,2 1,-1,20
2370 DATA 3 2,2,2 2 3 -1 50
2380 DATA 2 6 7,8,-1 80,2,4 8 -1
2390 DATA 2 1,-1 100
2410 DEFPROCend
2420 VDU  3,3,5;0;12
2430 PRINTTAB(  )"MUSHROOM MANIA
```


Programming: BBC

```
2440 COLOUR 2
2450 PRINT"  In "Mushroom Mania" you are "Prevart" the ... [illegible] ... of the screen by shooting it, segment by segment."
2460 PRINT"  You will also have to contend with a "dangerous mushroom laying spider, and" "a snail" who is anything but slow. The "snail" leaves poisoned mushrooms [illegible]"
2470 PRINT "[illegible] of the cent[illegible] there are [illegible] to both you [illegible] code
2480 PRINT"  On later screens a [illegible] flea will appear. The number of mushrooms will increase and so will the length of the centipede
2490 PRINT"  There are five speeds and [illegible] levels to choose from. You start with three lives, although an extra "life" is awarded on completion of each "screen."
2500 COLOUR 3
25[illegible] PRINT TAB(9) "Press SPACE BAR to start"
2520 REPEAT UNTIL GET=32
2530 ENDPROC
25[illegible] DEFPROCchars
2560 VDU23,224,[illegible] 120 -8 [illegible]4,24
2570 VDU23,22[illegible] [illegible] ,15,60,124 60 0
2580 VDU23,[illegible] 106 -1,191,223,102,62
2590 VDU23 227 60 118,-1,240 252,126 60,0
2600 VDU23,229,7,[illegible] 17 14 15,15,127 -1
2610 VDU23,229,[illegible],34 162,167,39 237 -2,-4
2620 VDU23,230,0,[illegible],63 38,[illegible]47 35,63,8
2630 VDU23,2[illegible],[illegible] 189,1[illegible],-1,-1 126,0
2640 VDU23,232 [illegible] 192 -4 240 231,146,94,16
2650 VDU23 233,24 24,24 36,90 [illegible] 189,130
2660 VDU23 234,24,24 24 24,24,24,[illegible]
2670 VDU23,235,[illegible] 60 [illegible]26 -1 -1,24 24 24
2680 VDU23,236,33,51,12,12 30,45 33,0
2690 ENDPROC
2700 :
2710 DEFPROCenve
2720 ENVELOPE 1,1 0,-4,0 0,90 0 42,-16,-2 -2 126,94
2730 ENVELOPE 2,1,0,0,0,0,0 0 120,-1,-2,-3,127,127
27[illegible] ENVELOPE [illegible]
0 0 -[illegible],100,60
2750 ENVELOPE 4,3,6,[illegible]-1,0,0,-1,120,-10,-1,126 126
2760 ENVELOPE 5 13[illegible] 4,[illegible],3 [illegible],1,125,0,0 [illegible],126 0
2770 ENVELOPE 6,[illegible] 0,[illegible]0,[illegible] [illegible]
-5 126,1
27[illegible] ENDPROC
2800 MODE7:REPORT:PRINT" at line ";ERL
2810 *FX15,1
2820 END
```

Programming: Amstrad CPC

Xen

by Simon Goodwin

On we go with part two of Xen for the Amstrad CPC's

Asci, start address, length reveals text anywhere in memory

Proglen returns the length of CPC464 Basic programs

Deek address, @n% and *Doke address 16 bit number* perform a two byte Peek or Poke

Pron and *Proff* direct all output to the printer and revert things to normal

Key, @n% returns the Ascii value of a key pressed. Much faster than *Inkey*

Flush flushes the keyboard buffer

Shift, source address destination address, length moves a block of memory to a new location

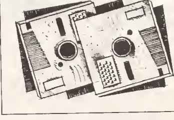
Disable and *Enable* affects the break key

Waitkey waits for a key to be pressed

Rompeek, rom, address n% is used to examine either the upper (rom=1) or lower (rom=1) Rom. The start address should be between zero and 16384 for the lower Rom or 49152 and 65536 for the upper Rom

Help lists all the Xen commands

Note that where a command requires a variable which is prefixed by @ the variable should be defined before using the command ie type *a%=0*



```
200 DATA 22[illegible], [illegible]0, 0, 2[illegible] [illegible]12, 1, 205, 36, 187 [illegible] 201, 205, 255, [illegible]87, 205, 7[illegible] 187 20[illegible] 221 11[illegible], 0 221, 102, 1[illegible] 27, 187 119, 201, 42, 13[illegible], 174, 2[illegible] 7, 9[illegible], 129 [illegible]74, 237, 82, 20[illegible] [illegible]87, 15[illegible] 4, 23[illegible], 6, 255, 205, 27, 187 [illegible], 251, 201, 22[illegible]
210 DATA 11[illegible], 2 221, 102, [illegible], 22[illegible], 94, 0, [illegible], [illegible] 1, 26, 119 1[illegible] 35, 26, 11[illegible], 201, 221, [illegible]10, 2, 22[illegible], 102, 3, 221, 126, 0, 113, 35 221, 126, 1, [illegible]19, 20[illegible], 42, 2[illegible]2, 189 34, 162, 163 33 1[illegible]0 163, 34, 2[illegible]2 189 20[illegible] 42, 162, 163, 34, 212, 189, 20[illegible]
220 DATA 245 53, 161, 163 188, 56, 7, 62, [illegible], 205, 24[illegible], 189, 48, 249, 124, 50, 16[illegible], [illegible]63, 241, 245, 205, 241, 139, 2[illegible]8, 159 [illegible]3 24[illegible] 24 227 24[illegible], 2[illegible]1, [illegible]
```

```
[illegible] 22, 11[illegible] 2[illegible] 12, 3, 22[illegible], 4
4, 6 22[illegible] 2 205, 16[illegible]
[illegible]
[illegible] DATA 22, 11[illegible] 22, 192, 3, 221,
94, [illegible] 221, 86, 1, 62, 22, 2[illegible], 153, 198
2[illegible] 205, 108 197, 6[illegible], 44, 7, 64,
[illegible] 165, 205, 16[illegible], 188, [illegible]
22 165, 33, 1, [illegible] 6 16 205, 173 164
[illegible] 169, 165, [illegible] 254, [illegible] 221
[illegible]
[illegible] DATA 130, 16[illegible], 6 15 33, 1, [illegible] 205
173 164, 22[illegible] 33 168 165 [illegible]
1, 17, 205 173 164 22[illegible] 33 44, 165
[illegible] 3 1 6 16 205 173 164, [illegible]
[illegible] 1, [illegible]
76, 245 2[illegible] 197, 241, 254, [illegible] 32
[illegible]
[illegible] DATA [illegible] 165 6 7 33 3
[illegible] 64 24, 4[illegible] 254, [illegible] 32
[illegible] 3, 14
[illegible] 24, [illegible] 254, 42, 32 14,
[illegible] 6 7, 33, 3, 19 205
[illegible] 47, 165, 6
[illegible]
260 DATA [illegible] 64, 22 [illegible]
6[illegible], 165 33, 5, 1 [illegible] 205, 17[illegible] 164,
22[illegible] 33, [illegible]
[illegible] 22, 205, [illegible] 16
5, 33, 7, 1, 6, 16 [illegible] 17[illegible] 164 22[illegible]
3[illegible], 166, 16[illegible], 2[illegible]
3, 205
270 DATA 137, 164 22[illegible] [illegible] 35
3, [illegible], 6, 16, 2[illegible] 164 2[illegible] 168
16[illegible], 221, [illegible] 26, 22[illegible] 2 27 2[illegible],
167, 164 [illegible] 2[illegible] 17 [illegible] 126,
[illegible] 205 [illegible] 167 22[illegible], [illegible] 201,
229, 245 62 35 205, 90, 157 24, 22
5, 124
280 DATA 205, 215 164, 125 205, 215, 1
64, 201, 20[illegible], 22[illegible] 64, 58, 167, 16[illegible], 20
[illegible] 205, 93, 197
[illegible] 24[illegible] 20[illegible], 24[illegible] 24[illegible], 63, 202 63,
213 63, 2[illegible] 63, 21[illegible], 248, 164, 58, 167
[illegible] 165, 241, 22[illegible] 5, 205, 248, 164 5[illegible],
16[illegible], 165
290 DATA 201 254, 1[illegible], 56, 3 198, 5[illegible] 2
01 198 49, 201 205, 110, 188, 201, 20
[illegible] 188 20[illegible] 33 [illegible] 0 62 [illegible] 20
[illegible] 188, [illegible]
[illegible] 188 [illegible]
7[illegible] 69 6[illegible], [illegible]
, 7
300 DATA 73 7[illegible] 69, 3[illegible], [illegible]
32, 3[illegible] 32, 3[illegible] 32 58 [illegible]
82, 94, [illegible] 65 [illegible], 69 [illegible]
32 5[illegible] 32, 76, 69 78 7[illegible]
32, 3[illegible] 32, [illegible], 3[illegible], 32 [illegible]
83 69 67 32, 32, 32 [illegible]
32, 32
310 DATA 3[illegible] 58, [illegible], 40 [illegible] 7[illegible],
67, 4[illegible] 40, 66 7[illegible] 7[illegible] 6[illegible] [illegible], 89, 41,
40, 5[illegible] [illegible] 67 7[illegible] 7[illegible] 4[illegible] 3[illegible] 78, [illegible]
7[illegible] 69, 6[illegible], 3[illegible], 7[illegible] 7[illegible] 6[illegible] [illegible] 3[illegible],
32, 32, [illegible] 4[illegible] [illegible] 79 [illegible]
67 84 6[illegible] 68, 32, 66 6[illegible] [illegible] 67
[illegible]
320 DATA [illegible], 0, 53 46 54 46
71 3[illegible], 32, 32 49, 50, 4[illegible], 56, 46 56,
54 [illegible] 8 [illegible] 192 1 64, [illegible] 203 [illegible]
2 35, [illegible]6, 251, 1[illegible], 32 245, 21, 32, 239
[illegible]
```


Memory Recall

by Endaff Bowen

The following menu driven program provides a way of examining the contents of memory altering them and then rewriting to memory or microdrive

The left and right arrow keys move backwards and forwards in memory whilst *Enter* saves the contents in memory

```
[illegible]
```

```
430 IF KEYTA = 32 [illegible]
440 END_AP[illegible]TATI[illegible]
450 UPDATE
460 END IF
470 :
480 IF [illegible]
490 CSIZE [illegible]
500 EXIT [illegible]
510 END IF
520 :
530 KEYBOARD=[illegible]
540 SELect ON KEYBOARD
550 =[illegible]_mem:PRINT [illegible]
560 [illegible]LOCATION=LOCATION[illegible] UPDATE
570 =[illegible]LOCATION[illegible] UPDATE
580 END SELect
590 IF LOCATION[illegible]
600 IF LOCATION[illegible]PEEK[illegible]
610 END IF [illegible]END IF
620 END REPeat LOOP
630 END DEFine
640 :
650 REMark **** update [illegible] ****
660 :
670 DEFine PROCedure [illegible]
680 PRINT #3[illegible] PEEK(LOCATION)
690 END DEFine
700 :
710 DEFine PROCedure [illegible]
720 CSIZE #[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible] INPUT [illegible] NAME$
[illegible] PRINT [illegible]
[illegible] PRINT [illegible] NAME$
840 PRINT [illegible]
850 :
860 key$=INKEY$[illegible]
[illegible] IF key$[illegible]
[illegible] PRINT [illegible]
890 PRINT #3 [illegible] Enter [illegible]
[illegible] INPUT #[illegible] ce$
[illegible] IF [illegible]
[illegible]
[illegible] END IF
[illegible] IF [illegible]
950 recall mem
960 END IF [illegible]END IF
970 :
980 IF key$[illegible]
990 OPEN_NEW #[illegible]NAME$
[illegible] :
[illegible] FOR address=[illegible]
[illegible] PRINT #[illegible] PEEK(address)
[illegible] PRINT #3[illegible] PEEK(address)[illegible]
[illegible] END FOR address
```

```
[illegible]
[illegible] CLOSE #[illegible]
[illegible] END IF
[illegible] END DEF [illegible]
[illegible]
[illegible] DEFine PROCedure set_[illegible]
     OPEN #[illegible]
[illegible]
[illegible] OPEN #4,con_[illegible]
[illegible] OPEN #[illegible]
[illegible] OPEN #7 con_[illegible]
[illegible] OPEN #8 con_[illegible]
[illegible] PAPER #[illegible] BORDER #[illegible]
[illegible]
[illegible] BLOCK #[illegible]
[illegible] BLOCK #[illegible]
[illegible] BLOCK #[illegible]
[illegible] BLOCK #[illegible]
[illegible] BLOCK #[illegible]
1240 [illegible]
[illegible] WINDOW #[illegible]
[illegible] PAPER #[illegible]
[illegible] FOR w[illegible]
[illegible] OPEN #w[illegible] con_[illegible]
[illegible] PAPER #w[illegible] BORDER #w[illegible]
[illegible] NEXT w[illegible]
[illegible] PAPER #4 [illegible] BORDER #[illegible]
[illegible] PAPER #5 [illegible] BORDER #[illegible]
[illegible] PAPER #[illegible] BORDER #[illegible]
[illegible] END DEF [illegible]
```

Block Delete

by Graham Young

This Spectrum program can be used to delete blocks of lines from programs. Just enter the following line and save it. Then, when you want to use it, merge it with the target program.

To delete a block mark it out by placing *Data 0* at the start and finish of the block. Then, type *Goto 9999* and enter the line numbers of the two *Data* statements. Now delete the first *Data 0* statement and the rest of the block will be deleted with it.

```
9999 INPUT X2,x1  RESTORE X1  READ X1  L
ET X1=PEEK 23639+256*PEEK 23640+1  RESTO
RE X2  READ X2  LET X2=PEEK 23639+256*PE
EK 23640-8  LET X3=X1-X2  POKE X2-2,X3-I
NT (X3/256)*256  POKE X2-1,INT (X3/256)
```

Double Height

by R Doughty

This program for the Spectrum will create double height text. The routine takes approximately 30 seconds to create the two character sets (which can be saved with *Save "Dbl" Code 63232 1536*) necessary.

Lines 70 to 90 demonstrate how to use the routine. The variable *A$* contains the text, *r* is the line number and *c* is the column where the text is to be printed.

```
[illegible] FOR [illegible] STEP [illegible]
[illegible] FOR [illegible] TO 7
[illegible] PEE [illegible]+INT
(y/[illegible])
[illegible] POKE [illegible]+INT
(y/2)+4)
[illegible]
[illegible] LET [illegible]: G
O SUB [illegible]
[illegible] GO SUB [illegible]
[illegible] A$="ABCD[illegible]": LET r=[illegible]: GO SUB
 [illegible] STOP
[illegible] LET [illegible]=INT ([illegible](A$)/2)
[illegible] FOR [illegible]
[illegible] POKE [illegible]
170 PRINT AT [illegible]
[illegible] POKE [illegible]
190 NEXT [illegible]: RETURN
```

TV Test Pattern

by John Yobec

The following Spectrum program will enable you to discern whether your TV set is functioning correctly.

On running the program a colour bar containing six colours will be displayed. They are, in order, yellow, cyan, green, magenta, red and blue. If any of the colours are incorrect then your set is in need of repair or adjustment.

Now, press any key and then a circle and cross hatch display will appear. The lines of this pattern should be sharp. If not then adjust the focus.

If the lines are not black then your convergence needs adjustment. If the circle is egg shaped then linearity needs adjusting.

```
10 BRIGHT 1
20 FOR n=1 TO 22
30 FOR c=7 TO 0 STEP -1
40 PAPER c: PRINT "    ";
50 NEXT c:NEXT n
60 BRIGHT 0: PAPER 7
70 IF INKEY$="" THEN GO TO 70
80 CLS
90 FOR y=0 TO 175 STEP 16
100 PLOT 0,y
110 DRAW 255,0
120 NEXT y
130 FOR x=0 TO 255 STEP 16
140 PLOT x,0
150 DRAW 0,175
160 NEXT x
170 PLOT 255,175: DRAW 0,-175
180 PLOT 0,175: DRAW 255,0
190 CIRCLE 127,88,84
200 IF INKEY$="" THEN GO TO 200
210 GO TO 10
```



With Kenn Garroch

Bored with games

A Harvey of Wellingborough Northamptonshire, writes

Q I recently bought a Commodore 64 and after getting bored with playing games, decided to try my hand at programming in Basic. All went well until I came across the commands AND, OR and NOT. What do these do and why do they not always appear to work correctly?

A The logical operations AND, OR and NOT can be used in two ways. The most obvious is for dealing with situations where things are true or false. The other use is for bit orientated operations, perhaps the most useful in the long run.

On the Commodore, any non-zero value between −32768 and 32767 is regarded as being true, zero being false as the following program shows

```
10 A=1
20 IF A THEN PRINT "A IS TRUE"
30 A=0
40 IF A THEN PRINT "A IS STILL TRUE"
```

If you had a program that took in a set of responses to questions, either true or false (One or zero), the AND operator could be used to test them, e.g.

```
IF A AND B AND C AND D THEN "ALL ANSWERS ARE TRUE"
```

The problem comes when you want to test if some are true and some are false. Here it is best to use −1 as true since NOT −1 is 0 and NOT 0 is −1. As I will explain in a moment this is due to the bitwise operation of the logical operators and the way in which integers are stored. Unfortunately, for logic in IF statements, it is not always possible to use the AND and OR operators on any old values, you must make sure that you stick to one value for true, i.e. −1 and 0 for false otherwise, things will go awry.

The whole thing becomes more obvious when the bitwise logical operations are used. The computer stores numbers in 16 bit binary form (−32768 to 32767, the most significant bit being used to denote plus or minus), these bits can be one or zero. Taking the logical operations on two bits, they are:

Considering all possible values of bit 1 and bit 2

bit1	bit2	bit1 AND bit2	bit1 OR bit2
0	0	0	0
0	1	0	1
1	0	0	1
1	1	1	1

These are known as truth tables and show the results of all possible inputs to the functions AND and OR.

Fun with the 6502

B Devlin of Norwich, Norfolk writes

Q I have been playing around with the 6502, for fun more than anything else. One part of the processor I don't understand are the interrupts and how they work. Could you explain what IRQ and NMI are?

A The 6502 microprocessor has a number of interrupt possibilities, the main ones are IRQ (interrupt request) and NMI (non-maskable interrupt). Reset is also an interrupt but is used for power up purposes only, i.e. it causes the microprocessor to jump to its first instruction. On the 6502 chip itself, there are pins available for the IRQ, NMI and RST inputs. These are all active low which means that ordinarily, they are held at 5 volts but an external piece of hardware is used to pull them down to 0 volts informing the processor that an interrupt has occurred.

Once the 6502 has been notified of an interrupt it drops what it is doing and jumps to the specified interrupt service routine. The addresses of these routines are kept at the top of memory from FFFA to FFFF (hex). The first is the NMI address kept in two bytes in locations FFFA (low 8 bits) and FFFB (high 8 bits). Following this is the reset address in FFFC and FFFD (again low high respectively) and finally the IRQ address in FFFE and FFFF. Before going to the service routine, the 6502 stores the processor status and the value of the program counter on the stack. These can then be accessed by the RTI (return from interrupt) instruction to continue the program where it left off. The NMI interrupt cannot be stopped if the NMI pin is pulled low (obviously this is why it is called non-maskable). On the other hand, the status register contains a mask bit for the IRQ interrupt which, if set denies the processor access to the interrupt service routine. If this is cleared (using the CLI instruction), the processor will save its current position and jump to the routine whose address is given in locations FFFE and FFFF. At this point, the processor also sets the mask bit in the status register to disable any other IRQs that might come along. The mask bit can also be controlled from the program with the SEI and CLI instructions to set and clear the bit respectively.

The reset line can also be used as an interrupt although most systems won't allow this since the signal also goes to the reset pins of all the external circuitry. The 6502 also has a hangover from the 6800 processor called the software interrupt. This instruction (BRK) causes the processor to think an IRQ has occurred although BRK is not disabled by the IRQ mask bit. The vector (address where the address of the interrupt routine is held) is the same as that for IRQ (FFFE and FFFF) and the IRQ mask bit is set by the processor when a BRK occurs. The break flag in the status register is also set so that the program can tell whether the interrupt was caused by IRQ or BRK.

NMI, IRQ and BRK interrupt service routines are all terminated with the RTI instruction which causes the processor to retrieve the status register and the program counter from the stack to continue execution where it left off.

Forth From Basic

L Burbridge of Hinkley, Leicestershire, writes

Q I have been programming in Basic now for two years and have decided that it is time I branched out to another language. I would like to get a Forth for my micro but am put off by the use of Reverse Polish Notation. Could you explain the difference between this type of arithmetic and the normal kind I was taught in school?

A Reverse Polish Notation (RPN) is used in Forth because of the language's almost total dependence on the LIFO (Last In First Out) stack. Normal arithmetic puts its operators (+,− x,÷) in between the numbers to be operated on, i.e. it is infix. RPN, on the other hand is post fix which means the operators come after the numbers. For example

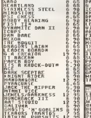
2+3 would be 23+ in RPN

2+3x10 could be 23+ 10x or 23 10+x in RPN

The latter example shows that RPN is a lot more specific without the need to resort to brackets or set forms.

In Forth, things must be placed onto the stack before they can be operated on. The sum 23+10x is entered as exactly that in Forth. Entering 2 and 3 puts them on the stack (from the bottom the stack is 23) entering + leaves 5 on the top of the stack (with nothing underneath). The 10 then leaves the stack with 510 on it. The x multiplies these two together leaving 50 on the top. The LIFO stack is therefore ideally suited to RPN and once you get the hang of it, it makes a lot of sense.

MEGAMAIL



SPECTRUM	cass
CAULDRON II	7.95
KONAMI TENNIS	6.95
XARQ	8.65
HEARTLAND	8.65
STAINLESS STEEL	6.90
MINDSTONE	8.65
PSI CHESS	8.65
BOBBY BEARING	6.90
FIST II*	8.65
DYNAMITE DAN II	6.90
ICUPS	8.65
DAN DARE	8.65
NEXOR	6.90
THE BOGGIT	6.90
DRAGONS LAIR*	8.65
LEADER BOARD*	6.90
G A CREATOR	19.95
TT RACER*	8.65
PAPER BOY	6.90
ITS A KNOCK-OUT*	6.90
ACE	8.65
DARK SCEPTRE	8.65
KNIGHT RIDER	6.90
MANDRAGORE	12.95
PYRACURSE	8.65
JACK THE NIPPER	6.90
MIAMI VICE	6.90
JEWELS/DARKNESS	12.95
HUNCHBACK III	6.90
ART STUDIO	12.95
GALIVAN	6.90
GHOSTS 'N' GOBLINS	6.90
TERRORS TRANTOS	7.95
TRIVIAL PURSUITS	12.95
DRUID*	7.95
HIJACK	8.65
MINDSTONE	7.95
SPINDIZZY	8.65
PUB GAMES	8.65
TIME TRAX	

COMMODORE	cass	disc
CAULDRON II	7.95	
MIAMI VICE	7.95	
PARALLAX	7.95	
G A CREATOR	19.95	24.95
ICUPS	8.65	
KNIGHT GAMES	8.65	
DRAGONS LAIR	8.65	12.95
KNIGHT RIDER	7.50	
LEADERBOARD	9.95	12.95
VIDCOM 64	4.95	
ARAC	8.65	
FIST II	8.65	
HUNCHBACK III	8.65	
MANDRAGORE	12.95	12.95
TRAP	9.95	9.95
JEWEL/DARKNESS	12.95	17.95
ITS A KNOCK-OUT	7.95	
SUPER BOWL	8.65	
PAPER BOY	8.65	
GHOSTS'N'GOBLINS	8.65	
DAN DARE	8.65	
GALIVAN*	7.95	
WAR	7.95	
TRIVIAL PURSUITS	12.95	

ATARI ST	disc
LEADER BOARD	34.95
TIME BANDITS	21.95
WINTER GAMES	21.95
BARATTACAS	38.95
BLACK CAULDRON	25.95
BALLYHOO	25.95
PAINTWORKS	29.95
LASERBASE ST	66.95
MUSIC STUDIO	27.95
THE PAWN	21.95
D E G A S	34.95
KUMA GRAPH	34.95

AMSTRAD	cass	disc
PACIFIC	8.65	
ROOM 10	6.90	12.95
STAINLESS STEEL	8.65	
NEXOR	7.95	
GHOSTS'N'GOBLINS	8.65	12.95
THING ON A SPRING	7.95	
INTER KARATE	6.95	11.30
MONSTERS/MURDAC	8.65	12.95
BATMAN	7.95	
MIAMI VICE	7.95	
JACK THE NIPPER	7.95	
KNIGHT GAMES	7.95	
SWEEVOS WORLD	8.65	
MISSION ELEVATOR	8.65	
FAIRLIGHT	8.65	
HUNCHBACK III	8.65	
EQUINOX	8.65	
TURBO ESPRIT	7.95	
TRIVIAL PURSUITS	12.96	

AMSTRAD PCW	disc
BATMAN	12.95
FAIRLIGHT	12.95
MONSTERS/MURDAC	17.95
JEWELS OF DARKNESS	17.95
CYRUS 2 CHESS	12.95
CLOCK CHESS 3D	17.95
G GOOCH'S CRICKET	12.95
BRIDGE PLAYER	17.95
LORD OF THE RINGS	17.95

MSX	cass
MANDRAGORE	12.95
INTER KARATE	6.95
STEVE DAVIS SNOOKER	7.95
TASWORD MSX	12.20
JET SET WILLY	6.95

SEND CHEQUE/P.O. OR A SAE FOR A FULL PRICE LIST TO........ ..
MEGAMAIL
12 ETTRICK SQUARE
TOWN CENTRE
CUMBERNAULD
G67 1ND

Please send me
1) for my at
2) for my at
3) for my at

I enclose a cheque/PO for
£ .

* dependant on release dates

THE SOFTWARE STORE LTD
35 London Road Tooting, London SW17
Tel: 01-685 1476

Specialists in Atari software.

Also have a wide range of discount software for all other makes of computer.

Now available for the Atari STI

★ Side winder – with the scrolling editor £24.95

Come and see us at the 'PCW Show', or call us at any time.

FOR SALE

DISCS

AMSOFT	3" CF2	£24.00 per 10
AMSOFT	3" CF2DD	£59.00 per 10
ATHANA	5.25" DSDD 48tpi	£10.00 per 10
MAXELL	5.25" DSDD 48tpi	£17.00 per 10
MAXELL	5.25" DSDD 48tpi	£22.00 per 10
LVL	5.25" DSDD	£7.60 per 10
SONY D0440	3.5" SSDD	£10.90 per 10
SONY D0440	3.5" DSDD	£28.00 per 10
AMSTRAD	PCW 2nd Drive	£125.00 each
AMSTRAD	CPC 2nd Drive	£85.00 each
AMSTRAD	CPC6128 Green	£242.00 each
AMSTRAD	PCW8256	£378.00 each
AMSTRAD	PCW8512	£470.00 each
CUMANA		
40/80	BBC D/DRIVE	£127.00 each
AMSTRAD	CPM8256 I/FACE	£57.00 each

Carriage etc. Please add 15% VAT

RUGBY MICRO SPARES
30 OXFORD ST, RUGBY
CV21 3NF (0788) 71643
Callers welcome by App

AMSTRAD public domain cp/m utility programs. Send your own blank formated disc excluding case plus £5 to Hudson Computer Services 6 Swanborough Place Brighton BN2 5PZ

BBC 'B or 1.2 with DFS AMX ATPL 16K board plus 21FS Cumana 80/40 O/S Microvitec 1431 50 discs books mags etc £550 o.n.o. Tel Simon 01 290 5956 evenings

COM 64 C2N and some software Sell to £110 o.n.o. Also SFX sound sampler expander keyboard and some tapes and disks. Worth over £200 Sell for £90 o.n.o. Tel (0636) 63700

COMPLETE SPECTRUM system including keyboard microdrive speech synthesiser joystick £1000 Software and lots of books worth over £1500! Sell for just £175 o.n.o. Tel David on 01-800 7882 to secure this once in a lifetime bargain!

SEIKOSHA GP 100A spectrum printer with Tasword two paper and software – full width printing! £50 Tel Joe (Holford) 427 evenings

COMPLETE Amstrad 6128 computer system plus Commodore 64 plus 1541 disk drive plus hundreds of games on disks plus 2 joysticks Tel Andrew 01 848 1147

BLANK CASSETTES

WITH LIBRARY CASES

	C10	C15	C30	C30
10	3.60	4.00	4.15	4.60
20	7.00	7.20	7.80	8.20
50	15.00	16.20	15.00	17.00
100	27.00	28.00	30.00	30.00

Fully Inclusive (COD 65p extra)
Superior Tapes. Don't Settle for Less!

DISKS

[illegible]

MEMOTECH COMPUTERS AND ACCESSORIES

MTX 512 COMPUTER	£75.00
DMX 80 PRINTER	£150.00
RS232	£35.00
PASCAL ROM	£55.00
SPECULATOR ROM	£35.00
½ mb DISK DRIVE & INTERFACE	£197.00
1 mb DISK DRIVE & INTERFACE	£218.00

All the above prices are fully inclusive. We have the entire Memotech Range. [illegible]

DR HOME COMPUTERS
[illegible]
24-hr Phone Service [illegible]

48K Spectrum with SAGA Elite keyboard. Plus comcom programmable joystick interface 50 games including Elite Plus books £110 o.n.o. Tel Uxbridge 35955

AMSTRAD 464 colour computer £250 software joystick £200 Tel Iver 654445



Listen to your radio

David Wallin introduces radio communications, an alternative to modems

As I said a few weeks back, I'll be doing quite a bit on the use of radios for micro users to communicate with each other. The advantage of communicating via radio is the loss of high quarterly phone bills, the disadvantages are the loss of range and to a certain extent the cost of equipment.

This week we'll introduce the use of radio for communication mainly dealing with receiving only. Why? Because to transmit you need a licence which costs money and requires you to take an exam. Lots of stuff about transmitting will be pretty boring to a person with no licence and who therefore can't transmit or make use of the information.

This article should tell you where you can get more information, explain a few things and for the most enthusiastic of you, tell you what equipment will be needed for listening so that you can get started.

The Radio Amateur Exam

As I said above, to transmit on the air waves you must first take and pass, the radio amateur exam. The RSGB (Radio Society of Great Britain) supplies a comprehensive booklet telling you whats in the syllabus, conditions, costs, etc. This booklet is free on request to the RSGB, whose address is at the bottom of the page.

Required Equipment

Here's the part for those of you who wish to get started right away. Information about the required equipment. There are three main pieces of equipment required to use your micro to *listen* in on the airwaves. These are a communications receiver, an antenna, an interface (and or software).

Communications Receiver is the technical name given to a good quality short wave (high frequency) radio receiver. Second hand they cost about £80–£120, brand new they cost from £150 upwards. A normal radio with SW reception can be used, though it is not really suitable as SSB and CW modes are required as well as AM. A good receiver (£100 upwards 2nd hand, from £250 new) should have a minimum specification of
500kHz–30MHz coverage,
more than 100Hz resolution, and AM, USB, LSB and CW (morse) anodes.

A variable bandwidth is an advantage, but an expensive one and is by no means vital. To get started cheaply, one of the radios with nine or 10 SW bands would suffice, though they are normal radios, not communications receivers.

A good antenna is vital for SW reception. A number of different antennae, including small satellite reception antennae, are advertised in amateur radio magazines. An active dipole is a popular SW amateur antenna and generally they are not too expensive and can even be home made. An active dipole is a good starter antenna.

A serious radio enthusiast will have many antennae ranging from specialised antenna for satellite reception (super high frequency) to a general coverage antenna such as an active dipole. Warning: an antenna should be kept well away from the computer as the CPU has a habit of causing bad interference.

There are a number of interfaces or terminal units on the market. These range from a £50 Maplin Electronics' RTTY kit to the highly expensive multi-mode TV's with everything from RTTY to Packet.

The Maplin Kit is a good TV and ideal for the beginner. It is not to expensive and offers good facilities for the price. It works with all RS 232 compatible micros. Another TV, for the C64, called the Pakratt PK 64, is available which offers, Morse, Baudot RTTY, Ascii RTTY, Amtor and Packet. This costs about £250 though, but does include software.

A good place to look for an interface or software is again in amateur radio magazines. Some micros will require special RTTY software and others will be able to use their normal telephone communications software.

There are packages available for the BBC, Spectrum and C64 which use the cassette port to take an input direct from the headphone socket on the receiver, by-passing the need for an interface. This makes reception a lot cheaper.

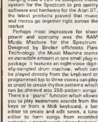
The total cost of equipment, for the beginner, could be from about £35 (only software, no TV or proper communications receiver) to about £200 (Second hand receiver, TV and software).

More to come on radio communications next week.

The most commonly used abbreviations in radio communications

AM	– Amplitude Modulated
AMRAC	– AMateur Radio and Computer (club)
AMTOR	– AMateur Telex Over Radio
BARTG	– British Amateur Radio Teleprinter Group
CW	– Morse
FM	– Frequency Modulated
FSK	– Frequency Shift Key
LSB	– Lower Side Band
RAMTOP	– Radio Amateur Microcomputer Techniques, Operations and Programs (society)
RIF	– Radio Interference Filter
RFI	– Radio Interference
RSGB	– Radio Society of Great Britain
RTTY	– Radio TeleTYpe
SSB	– Single Side Band
SSTV	– Slow Scan TeleVision
TV	– Terminal Unit
USB	– Upper Side Band
frequencies	
SHF	– Super High Frequency (30GHz–3GHz)
UHF	– Ultra High Frequency (3GHz–300MHz)
VHF	– Very High Frequency (300MHz–30MHz)
HF	– High Frequency (30MHz–3MHz)
MF	– Medium Frequency (3MHz–300kHz)
LF	– Low Frequency (300kHz–30kHz)
VLF	– Very Low Frequency (30kHz–3kHz)

Tape reviews and PCW's musical news



Mark Jenkins brings you musical news from the all-encompassing PCW show

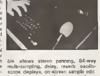
No shortage of music products for a wide range of machines at the Personal Computer World Show Ranging from a £29 95 complete music system for the Spectrum to pro quality software and hardware for the Atari ST, the latest products proved that music and micros go together right across the market

Perhaps most impressive for sheer power and economy was the RAM Music Machine for the Spectrum Designed by Sinclair offshoots Flare Technology, the Music Machine crams an incredible amount in one small plug-in package It features an eight-voice digitally-sampled drum machine, which can be played directly from the keyboard or programmed (up to three voices can play at once) to create rhythm patterns which can be chained into 255-pattern songs There s a "piano" function which allows you to play instrument sounds from the keys or from a Midi keyboard, a bar editor to create and edit tunes, a tune editor to form songs from recorded patterns, a sampler with editing features, waveform display, zoom feature, multi-sampling and effects such as digital delay, and full Midi out control over synths via the In, Out and Through sockets You can play pre-set sample sounds off your Midi keyboard, or replace them with your own samples

The software is menu driven and seems clear and easy to use, and the pack comes equipped with the microphone you'll need for sampling, and a demo tape Cost? Not £200, not £100 but £49 95 We'll publish a full review as soon as possible An Amstrad version is on the way too

Just along the balcony was the Cheetah Marketing Stand, showing the long-promised Midi interface and sound sampler for the Spectrum If you bought the Cheetah SpecDrum, Midi Interface and Sound Sampler you would have spent almost £130 Does the Ram Music Machine outperform the lot at £49 95? We'll be able to tell you when we get all four products to review!

Further up-market, Hybrid Arts showed some impressive Midi software for the Atari ST in the Atari Village EZ-Track ST is a 20-track real-time Midi recorder with extensive editing facilities which should enable you to produce a note-perfect performance DX Droid and CZ Droid are software sound library packages for the Yamaha and Casio synths which include 'intelligent' sound creation routines which enable you to create new sounds more easily On the hardware side, ADAP is a "sound workstation", basically a sampler with extensive editing facilities 16-bit sampling at 44 1KHz gives a 20 second sample At 10KHz you can have an astounding 80 second monophonic sample The ADAP is fully Midi compatible allows stereo panning, 64-way multi-sampling, delay, reverb oscilloscope displays, on-screen sample editing featuring cut and paste, auto looping, full compatibility with the new Midi sample information standard, and lots more Threatening to outperform multi-thousand pound studio gear like Bel and Rabis devices, the ADAP is standard 19-inch studio rack-mounting and costs $1995 Prices and distribution for the Hybrid Arts products in the UK have not yet been fixed



Some interesting bits and bobs in the post sack Paul Wood of Wooden Software, Worcester, is working on Midi hardware and software for the Memotech machine The prototype board is apparently up and working, and the software, designed specifically for the Casio and Roland synths (although presumably it will work with all Midi gear) is under 'development Paul would welcome enquiries from Memotech owners, or anyone else with specific Midi instruments in mind on 0905-24260 (after 6 00 pm) or at Wooden Software, 12 Bishops Avenue Worcester WR3 8XA

Lastly an excellent audio tape from Andrew Wilson of Edinburgh Andrew s system proves that Midi and computer control allow you to dispense with expensive eight- or sixteen-track recorders Unfortunately, Andrew seems to have spent a fortune on synths instead, with a Mirage sampler, Yamaha DX7 TX7, Oscar monosynth, Sequential Six-Trak, and the awesome Elka Synthex appearing on the tape together with Yamaha RX15 drums All the music is sequenced live using a BBC B with the UMI soft/hardware package This powerful (though, in some people's opinion overpriced) package allows very sophisticated real-time and step time compositions to be built up Andrew's pieces showcase the power of the sequencea, as well as the abilities of the instruments, in a series of pieces which are recorded directly to the master stereo tape This results in excellent recording quality and complete control over the music and sounds using the UMI s editing features One problem in recording in this way is that unless you have a big mixer with a lot of effects sends, the plenty of reverb and echo units, the overall ambience of each piece is difficult to vary Most of Andrew s pieces, which are fairly light up-tempo instrumentals sounding very much like advertising jingles (and that s meant as a compliment!) are awash with the same sort of reverb setting for each instrument – but with the introduction of more and more Midi-controlled effects units, such as the economical Alesis Midiverb, even this aspect of recording should be under Midi control from your computer soon If anyone would like to hear a copy of Andrew s excellent tape, send an sae to this column and we'll forward it to Andrew

If you have any queries or tips for this column please write to Mark Jenkins at *Popular Computing Weekly*, 12–13 Little Newport Street London WC2H 7PP Mark would also welcome examples of your own music on audio or program tape, or disc

CLASSIFIED

Semi-display — £7 per single cc (+ VAT)
Lineage — 30p per word (+ VAT)

CALL RODNEY WOODLEY on *01-437 4343* FOR SEMI/DISPLAY ADVERTISING

FOR SALE

YOUR PERSONAL CENTRONICS PRINTER

UNBEATABLE FROM £99 plus vat and £6 p+p

- DRAFT DOT MATRIX
- NEAR LETTER QUALITY
- SUBSCRIPT SUPERSCRIPT
- CONDENSE EMPHASIZE
- 96 CHAR+48 EURO+16 MATHS
- EPSON/IBM GRAPHICS
- OPTIONAL TRACTOR

ORDER NOW

ROCK HALL LIMITED
STATION RD, GLENFIELD
LEICESTER LE3 8BR
TEL 0533 313531
TELEX 341100

SPECIAL OFFERS!

Commodore 64	129 99	Opus S/D/drive (BBC 40)	59 99
Commodore 15/41 D/drive	138 99	Opus D/D/drive (BBC 40)	115 99
Commodore 1071 monitor	196 99	Opus discovery single	59 99
Commodore 1101 D/W/printer	119 99	Spectrum 128K	115 99
Commodore Plus 4 1551 D/drive	129 99	Spectrum 48K	79 99
Commodore 1520 P/plotter	34 99	Spectrum QL + printer	126 99
		Aten 1010 tape player	25 99

Lots of goodies, ring please and ask (20)

THERSBY COMPUTERS
25–28 Bowesfield Lane, Stockton,
Cleveland TS18 3ER
Tel: (0642) 604768

SUMMER SPECIALS

AMSTRAD PCW8256/8512

Hardware

RS232/Centronics	£58 95	Dust Cover Set	£7 99
2nd Disk drive	£161 99	Disk and RAM	£174 95
CF2 Disks	each £3 90	10 CF2 Disks	£36 25
CF2 DD Disks	each £6 44	10CF2 DD Disks	£59 00
Printer ribbon	£5 99	2 Ribbons	£10 90
256 K RAM expansion		PHONE FOR LATEST LOW PRICES	
HARD DISK		AVAILABLE SOON PHONE FOR DETAILS	

Software

MAP Integrated Accounts			£129 60
CAMSOFT Integrated System			£130 45
QUEST Trader & Analyser			£130 45
dBASE II	£39.95	DELTA	£81 00
Cracker 2	£42 99	Scratchpad Plus	£59.25
Mozoft/Microword	£42 20		
Pocket Wordstar	£42.20	with Spell Sort	£59 10
Newword 2 & Words	£86 36		
Prospell	£24 25		
Typing Tutors Touch N Go & IANKEY			£21 99
DR CBASIC DR PASCAL DR DRAW DR GRAPH			£44 95

SINCLAIR QL

Super Q Board 512K	£239 00	+ Dual 3½ Drives	£444 00
512K Expandaram	£115 00	Modaptor	£38 00
Microdrives 4 pack	£7 00	3 packs for	£18 00
10 3½ DS/DD disks	£25 00		

Prices include VAT & POSTAGE — THESE ARE JUST A SELECTION OF OUR SUMMER BARGAINS — PHONE FOR FURTHER DETAILS
All products are of and subject to availability

PERIPHERY
117 GAINSBOROUGH AVENUE,
OLDHAM OL8 1AJ
TEL 061-686 5805 (7)

COMMODORE 64 with datacassette £350 worth of software games £50 worth mags also Epson P40 printer all 7 months old Printer brand new worth £590 Sell £275 o n o Tel Louth 604374

COMPLETE SPECTRUM plus system cost £400 with £400 good software Yours for £100 cash or will split or swap for QL bits Tel Brian (Potters Bar) 58515

COMPUTER HIRE

TO HIRE A COMPUTER AND OR PERIPHERALS BY THE WEEK OR MONTH RING 01 607 0157 or 01 997 6457
WE SPECIALISE IN BBC AND ALSO HAVE A RANGE OF AMSTRAD COMPUTERS FOR HIRE

COMPUTER HIRE SERVICES
294A CALEDONIAN ROAD
LONDON N1 1BA (9)

SOME FABRIC RIBBON RE-INKING PRICES

Ribbon	Price £ p	Ribbon	Price £ p
Amstrad 8256 & 8512	2 [illegible]	Amstrad PCW8256	1 20
[illegible]	1 75	Canon [illegible]	1 82
[illegible]	1 75	Epson [illegible]	2 25
Epson [illegible]	1 80	[illegible]	1 80
[illegible]	2 55	[illegible] 4027	1 75
[illegible]	1 [illegible]	[illegible]	2 15

[illegible]

ALADDINK, (Dept PC), 4 Harker Crescent, Eyemouth, Berwickshire TD14 5AP (230)

DUPLICATION

CASSETTE COPIES

50 C10s FOR ONLY £40 INC P + P
FROM YOUR CASSETTE MASTER
IN REAL TIME PLEASE PACK
IN FOIL AND SEND CHEQUE TO—

SOUNDS GOOD
CLEAR CROFT BOTTOM LANE,
SEER GREEN BUCKS HP9 2UH
TEL (04946) 5900

DATA DUPLICATION Telephone 021 643 7113 for further details and prices or write to M G Copies Warwick Chambers 14 Corporation Street, Birmingham B2 4RN

CLASSIFIED ADVERTISING RATES:

Line by line 30p per word, minimum 20 words.

Semi-display: £7 per single column centimetre minimum length 2 cm (Please supply A/W as PMT Or supply rough setting instructions.)

THESE RATES DO NOT INCLUDE VAT

Conditions. All copy for Classified section must be pre-paid Copy date 7 days before publication

IF YOU WISH TO DISCUSS YOUR AD PLEASE RING Rodney Woodley 01-437 4343

Here's my classified ad.

(Please write your copy in capital letters on the lines below.)

		Please continue on a separate sheet of paper	

I make this .... words at .... per word so I owe you £ ....

Name ....

Address ....

....

Telephone ....

Please cut out and send this form to: Classified Department *Popular Computing Weekly* 12-13 Little Newport Street, London WC2H 7PP



ATARI
ST
Power Without The Price!
FREE SOFTWARE
3rd PARTY SUPPORT
520ST-M
£347
1040ST-F
£799
THE ATARI EXPLOSION!
FREE CP/M EMULATOR
IBM COMPATIBILITY
20Mbyte HARD DISK £739
NEW ST SOFTWARE PACKAGES
VIP PROFESSIONAL - LOTUS 1-2-3™ CLONE
SILICA SHOP
WE ARE THE UK's No1 ATARI SPECIALISTS
★FREE POST & PACKING ON MAIL ORDERS
★FREE NEXT DAY DELIVERY
★INFORMATION MAILING SERVICE
★TECHNICAL SUPPORT TEAM
★HIGHLY COMPETITIVE PRICES
★AFTER SALES SUPPORT SERVICE
★REPAIR SERVICE ON ATARI PRODUCTS
SILICA HOTLINE 01-309 1111
SILICA SHOP LTD, 1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX
SEND FOR FREE ATARI ST LITERATURE
PLEASE SEND ME FREE LITERATURE
ON THE NEW RANGE OF ATARI ST COMPUTERS
Address:
Postcode:

SOFTWARE

GOLDMARK SYSTEMS
UTILITIES FOR THE AMSTRAD

LORD OF THE RINGS
Side 1 of our conversion cassette will AUTOMATICALLY transfer the three games to disc including the screen Side 2 is for NON-DISC owners and will reduce the loading time of around 15 mins to just under 3 mins

cassette £4 00

SPEED-TRANS
SPEED-TRANS is specifically designed to transfer many programs that have been protected with the SPEEDLOCK protection system Contains full instructions to convert to disc

cassette £5 50

TRANSIT
The utility by Pride will copy individual files up to 42K in length from drive A-A A-B B-B and B-A IT DOES NOT REQUIRE THE USE OF CPM and is a necessity for those with a 5¼ second drive It is menu driven and is easy to use It is TRANSMATable to disc

cassette £4 00

VIEWTEXT
This utility by Pride will allow you to see the text in a BINARY file It is particularly useful for games that require passwords (eg Hacker and other adventure games) It is TRANSMATable to disc

cassette £3 00

WHY WAIT AGES FOR YOUR PROGRAMS TO LOAD – Let us help you to convert them to disc We have over 140 conversion routines most using TRANSMAT by Pride Utilities Phone or send for more information

UK prices shown EUROPE add £1 00 per title REST OF WORLD add £1 50 per title We accept EUROCHEQUES (Sterling please)

GOLDMARK SYSTEMS, 51 COMET ROAD, HATFIELD, HERTS, ENGLAND Tel 07072 71529 ANYTIME

£ PRICEBUSTERS COMP SERVICES £
The ONLY way to buy software and hardware for your home computer!

LOOK AT THIS WEEK'S AMAZING OFFERS

[illegible]

HARDWARE

[illegible]

WHY IT PAYS TO USE PRICEBUSTERS

[illegible]

PRICEBUSTERS COMP SERVICES
21 ABSHOT ROAD
TITCHFIELD COMMON
FAREHAM
HANTS PO14 4LY

400/800 **LOOK** NOW
XL/XE ST

ATARI OWNERS

Are you having difficulty finding suitable software. If so, then look no further We have available for both hire and purchase one of the largest selections of both UK and American titles to choose from Games and Utilities for all ages Hardware and add on utilities at discount prices and special deals regularly being offered If you would like further information please send a large s a e to —

CHARNWOOD PRODUCTS AND GAMES
30A Warwick Avenue, Quorn, Loughborough
Leicestershire LE12 8HD
Tel: 0509 412604

GAP SOFTWARE

[illegible]

COMMODORE 64 software for sale Archon II Bounces Nomad Silent Service Green Beret Shogun Time Trax Miami Vice I C U P S Law of the West and more £2 50 each Tel 01 470 0861

SCRABBLE £4 Tasword 2 £4 Micro-Pursuit £2 50 Mastermind £2 50 Househunter £2 50 for 48K Spectrum Cheque or P O E Lewis 38 Surrey Tower Graveney Grove London SE20 8UW

HOME ACCOUNTS
Put your house in order! Probably the best home use for your computer! Comprehensive coverage of bank accounts credit cards HP standing orders etc Instant accuracy check for all (detail) items Cashflow projection For all Amstrads Commodores and Spectrums
£9 95 or FREE details from

DISCUS,
FREEPOST
ILFORD IG1 1BR
Tel: 01 514 8141
(24 hours live!)

WE ARE GIVING AWAY

£1000

AMSTRAD CPC & SPECTRUM OWNERS
DO YOU ENJOY PLAYING GAMES?
CAN YOU SOLVE SIMPLE RIDDLES?
THEN YOU COULD WIN YOURSELF £1000

THE GAME OF THE CENTURY
ONLY £7 95 (add £1 overseas)

DISPLAY GRAFIX LTD
Unit B57, Northbridge Centre, Elm Street, Burnley, Lancs

AMSTRAD DISC USERS Tape-Disc Disc-Disc, Disc-Tape, plus much, much more all on one disc for only £10 95 (add £1 overseas)

SIX TRS 80 64K compatible Genie Plus disk drives and monitors plus full teaching package including time table small DOS word processing EDAS superscript £400 plus VAT Suit school Contact Thersby Computers 26–28 Bowesfield Lane Stockton Cleveland TS18 3ER Tel (0642) 604788

CBM 64 C2N and some software Sell for £110 o n o Also SFX sound sampler expander keyboard and some tapes and disks Worth over £200 Sell for £90 o n o Tel (0636) 63700

AMSTRAD 464 colour plus quick shot joystick and loads of software Boxed good condition with all manuals Bargain at just £200 o n o Tel David on 01-898 7692 today!!

SERVICES



FAULTY SPECTRUM?

As you are probably aware from press reports Sinclair Computers no longer have a repair department.

Our computer repair workshop has been an **OFFICIAL** Sinclair Repair Depot for the past six years and we are pleased to announce that we will continue to do your out of guarantee repairs as in the past

Send your faulty computer **DIRECT**

SPECTRUM	£16.75 inc parts
ZX81	£11.50 inc parts
16K RAM	£9.95 inc parts
MICRODRIVE	£15.95 inc parts
INTERFACE 1-11	£16.75 inc parts

CALL OR SEND WITH CHEQUE OR P O

T.V. SERVICES OF CAMBRIDGE LTD
FRENCH'S ROAD, CAMBRIDGE CB4 3NP
Tel: 0223 311371

COMPSWAP

AMSTRAD 6128 green screen hardly used £200 Also supercall 2 (cp/m) £30 Amor Protex (disc) £15 Tel 01 888 1333 evening and weekends

COMPUTER WOSKSHOP Croydon YMCA For beginners and all levels Every Saturday Tel 01 681 4715 (for details)

ACT SIRIUS for sales – with D M S and Wordstar Cost over £2 800 As new £500 Also RICOH 1600S daisy-wheel printer highest quality 60 cps Cost over £1 400 as new £500 Tel 01 930 4872 office hours

AMSTRAD CPC464 colour in very good condition Two years old Over thirty games and utilities Joystick printer £150 o n o Tel 01 986 8580 after 6 pm

ATARI 800XL with 1050 disk drive disks and software Swap for Spectrum 128 with microdrive(s) or Spectrum 48K with microdrive(s) Tel 0628 21854 (Andy)

ZX INTERFACE one and two ZX microdrives Cost new £130 Only £60 wanted Tel 051-423 3381

TRS 80 16K colour computer and printer plus ORHC and synthesizer and games Looking for a quick sale Three months old £100 o n o Still under guarantee Tel J Shepherd Bristol 621835 after 6pm

ATARI hyper drive 1050 disk drive enhancement. Allows true double density faster reading/writing and will back up protected software £40 Tel 01 508 2871

BBC twin 80W drives Z80 2nd processor plus perfect software Z80 basic Pascal Prism Modem AMX mouse plus software colour monitor 40W drive £725 o n o Tel Gavin 0702 74077

CBM 64, C2N tape unit disk and tape software worth £546 Seiko BC 1000 wrist terminal light rifle and mags Total value £783 sell for £375 Tel 0608 61884

COMPUTER SWAP

COMPUTER SWAP

Computer Swap entries are limited to 30 words. All entries cost £2.50 Please enclose a cheque or postal order or give Access or Barclaycard No in the box provided Only text appearing in the grid will be printed Send the form to Computer Swap *Popular Computing Weekly* 12 13 Little Newport Street, London WC2H 7PP

PLEASE NOTE All software offered through computer swap must be in original condition and for private sale only No advertisements for lists of software will be accepted.

It cannot be swapped
Warning It is illegal to advertise pirated software

Please write your copy in capital letters on the lines below

Name ....

Address ....

.... Telephone ....

☐ Please charge my Visa/Access card no



24 HOUR
COMPUTER REPAIR CENTRE
Repairs also undertaken for all the following computers:
SPECTRUM, COMMODORE, ATARI, BBC, IBM
The only AMSTRAD SPECIALISTS recommended by Amstrad
NO HIGH FIXED PRICE REPAIR!
FREE SOFTWARE WORTH £35 WITH EVERY SPECTRUM REPAIR
The established company with a proven reputation
Over the years we have built up an enviable reputation in the UK for computer repairs, which is second to none. This is based on many years experience in repairing Spectrum, Commodore, BBC and other leading makes – and we were the first AMSTRAD repair centre anywhere. This is why we have customers all over the world.
DON'T DELAY – ACT TODAY It's as easy as ABC!
We are the best, forget the rest, look what we offer
No high fixed price – you only pay what the repair actually costs.
While-U-Wait Service – spare parts for all leading computers – available over the counter.
State of the art test equipment to provide comprehensive test report and locate faults
Repairs to all leading makes of computer.
Amstrad specialist.
Spectrum rubber keyboards repaired for only £8.95
Commodore 64's, Vic 20's, Atari, Commodore 16's and Plus 4's repaired
Discounts for colleges schools etc
Every computer repaired by us is completely overhauled and tested before return.
All computers returned carriage paid and covered by insurance.
Three months guarantee included
Free Software worth £35 with every Spectrum repair.
A Simply send your computer securely packed, together with a cheque or postal order for the maximum fee to the address below. Your computer will be repaired and returned to you within 24 hours together with the balance of the fee and your FREE £35 worth of software.
B Or if you prefer a written quotation just send £2.50 to cover post & packing.
C Alternatively just quote your Access or Visa card number
DISCOUNT COMPONENTS e.g. Power Transformers
Commodore £29.00 + £1.50 p.p.
Spectrum £9.95 £1.50 p.p.
AMSTRAD REPAIRS from £9 to £35
BBC REPAIRS from £12 to £35
SPECTRUM REPAIRS from £7 to £19.90
COMMODORE REPAIRS from £12 to £35
SPECIALIST COMPUTER REPAIR CENTRE
Trade orders welcome
Dept. 6, 28 College Street, WORCESTER WR1 2LS
Telephone: 0905-611072/613023
VISA
Access
WE SET THE STANDARD BY WHICH EVERYONE ELSE IS JUDGED

There's a Dealer near you . . .

ESSEX

ESTUARY
PERSONAL COMPUTERS
318 CHARTWELL NORTH
VICTORIA CIRCUS SHOPPING CENTRE
SOUTHEND ON SEA
Tel: (0702) 614131

NOBLES
14-17 EASTERN
ESPLANADE
SOUTHEND-ON-SEA,
ESSEX
Tel: (0702) 63377/8

GLASGOW

THE COMPUTER DEPOT
205 BUCHANAN STREET
GLASGOW G1 2JZ
Tel: (041) 332 3944

MEGABYTE
12 ETTRICK SQUARE
CUMBERNAULD
G67 1ND
0236 738396

INTERCHIP
3 MILLER STREET
GLASGOW
Tel: 041-248 6667
Dealers for Amstrad/Atari and PC clones

KENT

ANIROG COMPUTERS
29 West Hill
Dartford
Kent
Tel: (0322) 91649

MICROWAY COMPUTERS
39 HIGH STREET
RAINHAM, KENT
Tel: (0634) 376702

MIDDLESEX

INNOVATIONS
COMPUTER & VIDEO
9 HARMONDSWORTH ROAD
WEST DRAYTON
MIDDLESEX UB7 9JS
Tel: (0895) 420457

LEEDS

MICROPOWER
NORTHWOOD HOUSE
NORTH STREET
LEEDS LS7 2AA
Tel: (0532) 458800

LONDON

GALLERY SOFTWARE
1st FLOOR
THE ARNDALE CENT,
WANDSWORTH,
LONDON SW18
Tel: 01-870 4941.

GAMES WORLD
129 KING STREET
HAMMERSMITH
LONDON W6
Tel: 01-741 4467

LIVERPOOL

NABITECH COMPUTING
SPECIALISTS IN AMSTRAD
PCW8256 – PCW8512
SOFTWARE & HARDWARE
MERSEYSIDE INNOVATION CENTRE
131 MOUNT PLEASANT
LIVERPOOL L3 5TF
051 709 0123/708 8775
Software Design Service Available

Microbyte
We talk business, not bits & bytes
NO. 1 ON MERSEYSIDE FOR
ATARI AND AMSTRAD
71 SEAVIEW ROAD, WALLASEY,
MERSEYSIDE L45 4QW
(051) 630 6933/638 1420
10 am – 6 pm
MAIL ORDER
SERVICE AVAILABLE

NORFOLK

THETFORD MICROS
SPECIALISTS –
COMPUTER REPAIRS
21 GUILDHALL STREET
THETFORD
NORFOLK
(0842) 61645

SUSSEX

GATWICK COMPUTERS
62 THE BOULEVARD
CRAWLEY, SUSSEX
Tel: (0293) 26240/37842

SURREY

ULTIMA
UNIT 28
WHITE LION WALK
GUILDFORD
(0483) 506939

POSITRON COMPUTING
15 CENTRAL PRECINCT
LLANELLI
SA15 1YE
0554 759624
AMSTRAD 8256
UPGRADE

YORKSHIRE

YORK COMPUTER CENTRE
7 STONEGATE ARCADE
YORK
Tel: (0904) 641862

HEREFORDSHIRE

HONEYSETT COMPUTERS
17 UNION STREET
HEREFORD HR1 2BT
Tel: (0432) 279404
ASK ABOUT
CLONKER SALE

Book your Classified or Semi-display advert by Credit Card

AMERICAN EXPRESS

Call Rodney Woodley on 01-437 4343

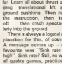
New Releases

John Cook looks through this week's new arrivals

Pick of the week

Tomahawk!

Program *Tomahawk* **Type** Simulation **Micro** Amstrad PCW **Price** £19 95 **Supplier** Digital Intergration, Watchmoor Trade Centre Watchmoor Road, Camberley, Surrey GU15 3AJ



This is the stuff – this is what the kids want – this is what the accountants want more to the point As if it needed making even more emphatically what we have here is a flight simulator on the PCW You know, the word processor that nice Mr Suger started selling late last year

Tomahawk is a direct conversion of the program that was so successful on Spectrum, Amstrad CPC Atari and Commodore 64 And it might be green, but it's great Being from Digital Integration, simulation supremos, it is not easy to play Helicopters aren't supposed to be easy you know

To start off with, try reading the detailed résumé on aeronautics in general and the Hughes Apache Advanced Attack Helicopter in particular Learn all about thrust and drag translational lift and ground cushions Then read the instruction, then take off then crash spectacularly into the ground

There's always a logical explanation for this, of course A message comes up – my favourite was "Sink rate to high" Sink rate? Still, as with all quality games, practice is well rewarded

And when you've mastered the flying bit, it's kill, kill, maim with the three on-board weapon systems

Bags of different features, difficulty levels, etc – joystick compatible if you've already invested in one, and challenging without being unplayable

The lack of sound effects does add a rather unearthly atmosphere to the thing, but if you have to get one arcade game for your Joyce, then this has to be it

Amiga

Program *The Pawn* **Type** Adventure **Micro** Amiga **Price** £24 95 **Supplier** Rainbird Software, 64–67 New Oxford Street, London WC1

Amstrad CPC

Program *The OCP Art Studio* **Type** Utility **Micro** Amstrad 6128 **Price** £19 95 **Supplier** Rainbird Software, 74–76 New Oxford Street, London WC1

Program *Miami Dice* **Type** Arcade **Micro** Amstrad CPC **Price** £2 99 **Supplier** Bug-Byte, Victory House, Leicester Place, London WC2

Program *Frost Byte* **Type** Arcade Adventure **Micro** Amstrad CPC **Price** £9 95 **Supplier** Mikro Gen, Unit 15, Western Centre, Bracknell, Berks

Did you ever have one of those Slinky spring things that you could make walk downstairs by themselves? More interestingly, has anyone ever found another use for the little blasders? Mikro-Gen has – by making one the star of its latest Amstrad opus, *Frost Byte*

In this scenario, it seems that Keezers (Slinkys to you) are being captured all over the frozen world of Cosmia, and it is up to you (playing the only Keezer to break free) to liberate your Keezer brethren from the goulish monsters that are your captors

This involves collecting different types of ammunition and eating different types of sweeties Teenage hero Ricky Steel he isn't, and although it's nothing out of the ordinery, the chances are you'll quite enjoy flopping around the colourful and nicely animated screens of this one

Especially if you recently bought yourself a Slinky

Atari

Program *Jewels of Darkness* **Type** Adventure **Micro** Atari 800/130 **Price** £14 95 **Supplier** Rainbird Software, 64–67 New Oxford Street, London WC1

Program *Leaper* **Type** Arcade **Micro** Atari XL/XE **Price** £2 99 **Supplier** Bug-Byte, Victory House, Leicester Place, London WC2

BBC/Electron

Program *The Last of the Free* **Type** Arcade Adventure **Micro** BBC/Electron **Price** £7 95 **Supplier** Audiogenic, PO Box 88, Reading, Berkshire RG7 4AA

Program *Psycastria* **Type** Arcade **Micro** BBC/Electron **Price** £7 95 (tape) £11 95 (disc) **Supplier** Audiogenic, PO Box 88 Reading Berkshire RG7 4AA

Program *Galaforce* **Type** Arcade **Micro** BBC/Electron **Price** £9 95 (tape) £11 95 (disc) **Supplier** Superior Software, Regent House, Skinner Lane, Leeds LS7 1AX

There are some games that deserve great praise for being original *Galaforce* is not one of these However, it is worth going gaga over because it draws from several very old shoot-em-up concepts, almost every classic from *Galaxian* upwards in fact and presents it so well that you can't help but sit back and applaud

Alternatively, you can crouch forward in frustration at not being able to get past the eighth screen and bang your fists up and down on the keyboard until it breaks Which is what I did.

Written in Mode 2 (that's 16 colours, but 20K of the BBC B's 32K of Ram used up), *Galaforce* looks pretty It's also very fast – really fast – and will have you gnashing your teeth as you get killed time and time again Just one more time, you think to yourself, just one more time.

Vast numbers of colourful aliens swoop down on your ship positioned at the bottom of the screen (although you can move around within the bottom third) and you must do your best to shoot them down with your finger firmly glued to the auto-repeat fire button Even though they don't start firing back until Zone Four, some of the waves require split second timing and nerve (not to say a fair measure of luck) to complete

Time after time you will say to yourself I will not be beaten by a game this simple and time and time again you get blasted into oblivion

With some good sound (which can be turned off for those late night sessions) and some great simple reflex action, this will appeal to every arcade masochist, that ever existed



C16/Plus 4

Program *Karate King* **Type** Arcade **Micro** C16/Plus 4 **Price** £6 95 **Supplier** Anco 35 West Hill, Dartford, Kent DA1 2EL

Program *Jeep Command* **Type** Arcade **Micro** C16/Plus 4 **Price** £2 99 **Supplier** Bug Byte, Victory House Leicester Place, London WC2

Commodore 128

Program *Thai Boxing* **Type** Arcade **Micro** Commodore 128 **Price** £11 95 (disc only) **Supplier** Anco 35 West Hill, Dartford, Kent DA1 2EL

Commodore 64

Program *Thai Boxing* **Type** Arcade **Micro** Commodore 64 **Price** £7 95 (tape) £9 95 (disc) **Supplier** Anco, 35 West Hill Dartford Kent DA1 2EL

Program *L'Affaire Vera Cruz* **Type** Adventure **Micro** Commodore 64 **Price** £8 95 **Supplier** Infogrames, Mitre House, Abbey Road, Enfield Middx EN1 2RQ

Program *Galax-i-Birds* **Type** Arcade **Micro** Commodore 64 **Price** £1 99 **Supplier** Firebird 64–67 New Oxford Street, London WC1

Program *The Best of Beyond* **Type** Compilation **Micro** Commodore 64 **Price** £9 95 **Supplier** Beyond, 64–67 New Oxford Street London WC1

Program *Leaper* **Type** Arcade **Micro** Commodore 64 **Price** £2 99 **Supplier** Bug-Byte, Victory House, Leicester Place, London WC2

Program *Jeep Command* **Type** Arcade **Micro** Commodore 64 **Price** £2 99 **Supplier** Bug-Byte, Victory House Leicester Place, London WC2

Program *Miami Dice* **Type** Arcade **Micro** Commodore 64 **Price** £2 99 **Supplier** Bug-Byte, Victory House Leicester Place London WC2

MSX

Program *Jewels of Darkness* **Type** Adventure **Micro** MSX **Price** £14 95 **Supplier** Rainbird Software 74–76 New Oxford Street, London WC1

Spectrum

Program *Scuba Dive* **Type** Arcade **Micro** Spectrum **Price** £2 99 **Supplier** Elite Systems Anchor House Anchor Road, Aldridge, Walsall WS9 8PW

Program *TT Racer* **Type** Arcade **Micro** Spectrum **Price** £9 95 **Supplier** Digital Integration Watchmoor Trade Centre Watchmoor Road, Camberley Surrey GU15 3AJ

Program *Jewels of Darkness* **Type** Adventure **Micro** Spectrum **Price** £14 95 **Supplier** Rainbird Software, 64–67 New Oxford Street, London WC1

Program *Icon Graphix 128* **Type** Utility **Micro** Spectrum 128 **Price** £12 95 **Supplier** Audiogenic, PO Box 88 Reading, Berkshire RG7 4AA

Program *Kai Temple* **Type** Arcade **Micro** Spectrum **Price** £1 99 **Supplier** Firebird, 64–67 New Oxford Street, London WC1

Program *Olli and Lissa* **Type** Arcade **Micro** Spectrum **Price** £1 99 **Supplier** Firebird 64–67 New Oxford Street, London WC1

Program *The Best of Beyond* **Type** Compilation **Micro** Spectrum **Price** £9 95 **Supplier** Beyond, 64–67 New Oxford Street London WC1

Program *Miami Dice* **Type** Arcade **Micro** Spectrum **Price** £2.99 **Supplier** Bug-Byte, Victory House, Leicester Place London WC2

Program *Gyron Arena* **Type** Arcade/Puzzle **Micro** Spectrum **Price** £1 99 **Supplier** Firebird Software 64–67 New Oxford Street, London WC1A 1PS

It almost makes me nostalgic to think that *Gyron* was released almost two years ago now – the final of the Gold range from the Firebird stable So why bring out a version of it now?

Well, *Gyron* an excellent 3D arcade/puzzle game, looks as impressive now as it did then – and all credit to the original authors for that – but what we have here is the version of the game that was presented to the finalists of the *Gyron* competition – first prize being a Porsche or £12 500

Thirty English contestants were gathered together (simultaneously with contestants in Denmark and Spain) and had to complete this *Arena* maze – together with those mysterious moving spheres and deadly towers – as fast as possible The winner did it in 18 minutes, so give your ego a chance and see if you can do better

Exactly the same as the original in gameplay, at this price, it's worth getting even if you have the Mk 1 version (for the new challenge) and if you never bought it in the first place then here s your chance to find out what all the fuss was about for £1 99 The winner? Oh – he was a Spanish guy – but there again, we didn t win the World Cup either, did we?

Program *Nightmare Rally* **Type** Arcade **Micro** Spectrum **Price** £7 95 **Supplier** Ocean Software, 6 Central Street, Manchester M2 5NS

Nightmare Rally may sound like the average trip down the M6, but National Coaches were never like this 3D scenery with a strict time limit bumpy terrain all the action of skidding and harsh last minute breaking together with trees that ll stop you dead if you crash into them On the other hand – was anyone else on the 0637 from Chester to London last week?

Well, in any case, no videos aboard your supercharged buggy in *Nightmare Rally*, as you scream up through the gears, weaving through the slalom-type gates to finish the course

Broadly based on a very successful arcade racing game, this is good fun, with a 3D display of the action on the top two thirds of the screen, and the various instruments (rev counter speedo, etc) on the bottom third The scrolling is fairly smooth and fast the sound is certainly noisy and although far from being a driving simulator, if you are in the mood for a fun driving game in which you can somersault your vehicle and get away with it – grab it while it's going

Ziggurat

More substance, less show

In 1984, any new games released appeared to be judged by its resemblance to *Manic Miner/Jet Set Willy*. Last year, licensing deals kicked off the spring fashions (if it moved, it was licensed), then sports simulations took over in time for the *PCW* show. This year, it's the coin-ops.

And very nicely this trend is doing, too, with plenty of conversions of excellent arcade games on the way this autumn.

The *PCW* show is always the one that no-one wants to miss. In five days at Olympia you can see exactly what will be on the market this autumn and Christmas.

It also signifies the end of that home computing bogle, the "dead summer".

This summer, however, doesn't appear to have been so bad, something which is probably connected with the weather. The software and hardware companies pray for poor weather because it keeps their customers indoors and at their computers.

Last year's *PCW* show surprised many people with its record-breaking levels of attendance, and this year's looks to be just as successful if not more so. Even on the trade days, the show was packed to bursting point and business frantic. Visitors and stand holders mopped brows in unison.

This year will probably be remembered as the Year of the Stand. Trestle tables, coloured nylon sheets and hand-written "special show offer" posters had to take their places at the sides of the hall, as the construction companies moved into the centre to build on-site high-tech, high rise blocks from scratch. Elite, Melbourne House, Ocean and US Gold vied for the architectural design awards. Enough people have been to exhibitions in the States to decide to go the American way.

But the *PCW* show isn't really about three storey stands with en suite bathrooms. It's about products that people can look at, get a hands-on test, and decide whether to buy when released. The glossy stands are just part of the marketing. *Revolution* from Vortex/US Gold would look just as good displayed on a wooden bench with a dust cover backdrop.

Heaven knows exhibitions are about the one place where the software customer can get a demonstration or play test before buying (any hardware customer who doesn't demand a full demonstration before buying needs their head examining). Video demos are beginning to reach the retailers, but have been a curiously long time in coming.

It's a shame therefore that quite a few companies were showing videos of the original, or the original coin-op machine *instead* of the game – or some screens from the game if it wasn't ready for public consumption. I would have preferred it if the videos/arcade machines had been *as well as* a look at the game. Videos of the game itself or part thereof are an acceptable compromise, I suppose. Still, it's all better than nothing at all.

One company that is making a point of timing its product launches exactly right to capture the public's interest for the show is Amstrad. Last year, the CPC 6128 and PCW 8256 had been launched ten days previously and given heavy coverage in newspapers – and TV, if I remember rightly.

This year, the Amstrad PCs (subject of more anonymous sightings than Lucan) filled the same gap. On both occasions, the Amstrad stand has been congested in the extreme. This year, I don't think there was a single show visitor who didn't crane their neck to a glimpse of the much-fabled machines.

Last year, Amstrad's rival for crowds was Atari. This time, Atari dissociated itself from the riff-raff and cunningly relocated in the corridor. The corridor, that is, between the home and business sections of the show, nicely bridging the gap between the home and business market.

Christina Erskine

NEXT WEEK

Special supplement QL developments

The QL is not dead. CST's Thor and Q Jump QLT compared.

Plus *Eye-Q*, graphics from Digital Precision, and *Giga Basic* and *Giga Desk*.

Chess

Martyn Bryant, with the second of our new monthly series on computers and chess.

All the latest news and events, plus a report on the progress of the *Popular* vs *Colossus* chess tournament.

Communications

All you ever wanted to know about radio communications but were afraid to ask. Phil Bridges has the details.

Games

The latest from Vortex, producer of such goodies as *Highway Encounter*. This one's called *Revolution*, and maintains the Vortex tradition.

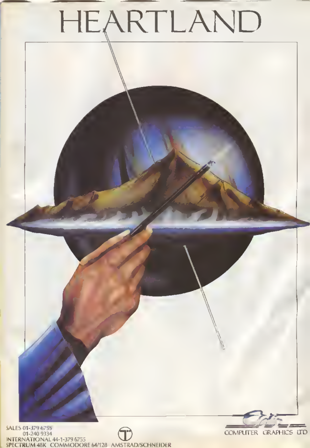
And new from Quicksilva is *Glider Rider*, a 3D arcade adventure.

Hackers

I really think that detatchable keyboards are best.

Perched on your lap - there's nothing to touch them for comfort & convenience.

I just wish I had one.


HEARTLAND
SALES 01-379 6755
01-240 9334
INTERNATIONAL 44-1-379 6755
SPECTRUM 48K COMMODORE 64/128 AMSTRAD/SCHNEIDER
COMPUTER GRAPHICS LTD


SUZUKI
48/128K SPECTRUM
TT RACER
BY R.J. SWIFT
TT Racer is a spectacular motor cycle racing simulation that puts you on the hot seat of a Grand Prix bike. Experience the unique thrill of racing with its stunning over-the-handlebars 3D view and state of the art solid graphics. Set-up your bike and practice hard on the 12 famous tracks, until you're ready for the challenge... To race against the other cool professional riders for the winning flag and the world championship.
Even the top Suzuki riders like Paul Lewis and Kevin Schwantz have been amazed at the accuracy of the tracks and the authentic feel of the bike.
Spectacular over-the-handlebars 3D display
All 12 Grand Prix tracks
All 4 solo Grand Prix classes
Challenge the computer and race against 15 other bikes or with networking 7 of your friends
4 different levels of competition
Full Grand Prix season points scoring
"Unbelievably realistic"
Paul Lewis – Suzuki No. 1 Grand Prix Rider
Buy TT Racer now and enter the great Suzuki/Casio Competition.
A DAY WITH SUZUKI AND FANTASTIC CASIO WATCHES TO BE WON
Closing Date 15th February 1987
SHELL CASIO
33
SUZUKI
SPECTRUM
TT Racer 48/128K £9.95
Tomahawk 48/128K £9.95
Fighter Pilot 48K 7.95
Night Gunner 48K £6.95
COMMODORE 64
Fighter Pilot Disk £14.95
Fighter Pilot £9.95
AMSTRAD PCW 8256/8512
Tomahawk Disk £19.95
AMSTRAD CPC 464, 664, 6128
Night Gunner £7.95
Night Gunner Disk £13.95
Tomahawk £9.95
Tomahawk Disk £14.95
Fighter Pilot £8.95
Fighter Pilot Disk £13.95
ATARI
Fighter Pilot Disk £12.95
Fighter Pilot £9.95
VAT and p.&p. inclusive within UK (overseas inc. 55p per cassette)
Tele Sales
Access
VISA
Please debit my Access/Visa card no
Expiry date
Cheques made payable to Digital Integration Ltd
I enclose a cheque/P.O. for ______ Total
Please send to
DIGITAL INTEGRATION
Watchmoor Trade Centre
Watchmoor Road
Camberley, Surrey
GU15 3AJ
Trade and Export enquiries welcome. Lifetime Guarantee.
Name
Address